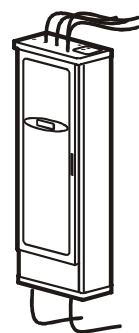


Operation

InfraStruXure[™] Power Generation System

250 A
208/480 V



About This Manual

Audience

This manual is intended for users of the InfraStruXure™ Smart Distribution Panel with Automatic Transfer Switch (ATS). It provides important safety warnings and instructions, an overview of the ATS components, a detailed discussion about the ATS display interface, instructions on how to add components to the ATS, and technical specifications.

Companion manuals

For additional information about your InfraStruXure Power Generation System, refer to the following sheets and manuals. The initial part numbers are listed below. Be aware that some of the documentation may have undergone one or more revisions (A, B, etc.):

- *ATS Unpacking Sheet* (990-1842)
- *Electrical Installation Manual* (990-1844)
- *Generator Reference Manual* (990-1846)
- *Network Management Interface User's Guide* (available on the APC Web site or the *Utility* CD) (990-1993)

How to find updates to this manual

You can check for updates to this manual by clicking on the **User Manuals** link on the **Support** page of the APC Web site (www.apc.com). Choose **Power Generation** and then **InfraStruXure Power Generation**. From the list of **InfraStruXure Power Generation** manuals, look for the latest letter revision (A, B, etc.) of the initial part number appearing on the back cover of this manual (990-1845).

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Safety

Overview

Save these instructions

This manual contains important instructions that must be followed during installation, operation, and maintenance of the InfraStruXure Power Generation System.

Safety symbols used in this manual



Indicates an electrical hazard, which, if not avoided, could result in injury or death.



Indicates a hazard, which, if not avoided, could result in severe personal injury or substantial damage to product or other property.



Indicates a potential hazard, which, if not avoided, could result in personal injury or damage to product or other property.



Indicates a heavy load that should not be lifted without assistance.



Indicates important information.

Cross-reference symbols used in this manual



Indicates that more information is available on the same subject in a different section of this manual.



See also

Indicates that more information is available on the same subject in a different manual.

Warnings

The components in the InfraStruXure Power Generation System can pose life-threatening danger when improperly installed, operated, or maintained. To prevent accidents, be aware of the dangers and act safely. Read and follow all of the safety instructions and warnings in this manual and in all of your component manuals.

The InfraStruXure Power Generation System is an optional standby system

The Generator and Automatic Transfer Switch (ATS) that you purchased from APC is classified as an *Optional Standby System* because it provides backup or standby power to data centers in the event of a sustained power failure.

The InfraStruXure Power Generation System is not to be classified as an *Emergency System* that is essential for safety to human life (e.g., fire pumps, operating room and life-support equipment in hospitals) as legally required by municipal, state, federal, or other governmental codes.

The InfraStruXure Power Generation System is not to be classified as a *Legally Required Standby System*, as it is not supplying power to aid in fire fighting, rescue operations, control of health hazards (e.g., sewage) and similar operations as required by municipal, state, federal, or other governmental codes.

Emergency and *Legally Required Systems* are not allowed to rely on municipal fuel for operation, or municipal water for cooling. *Emergency* and *Legally Required Systems* specify dual-fuel systems, with one of them being a two-hour, on-site fuel supply.

Your InfraStruXure Power Generation System is not to be classified as an *Integrated Electrical System*, as an orderly shutdown is not required to prevent damage to the generator. The generator is not to be paralleled with another generator.

Your generator will operate at its rated load without being refueled for a minimum of six hours, and should run with no load for a minimum of 12 hours.

Your generator can be without electrical power to the load terminals of the ATS for a maximum of 60 seconds, but will typically be without power for no more than 10 seconds.

Wire sizing

This product was designed to include an APC-manufactured 250-amp ATS. All wiring recommendations were sized for this amperage in accordance with the National Electrical Code (NEC). However, this does not prevent you from using the ATS at a lower amperage with smaller wire sizes. If you decide to operate this ATS at a lower amperage, ensure that the wire sizes are in accordance with NEC guidelines and your local codes.

Installation



See also

For complete installation instructions, refer to the *Electrical Installation Manual*.

Install the ATS in accordance with the National Electrical Code (NFPA 75) in the United States, or in accordance with the Canadian Electrical Code (CSA C22.1-02) in Canada.

When connecting Source 1 power to the ATS, install an external circuit breaker to protect against over-current conditions. The external circuit breaker must be rated at 250 A, with a symmetrical ampere rating of 35,000 rms.

Total power off procedure

To reduce the risk of electric shock or injury to personnel, disconnect all sources of power supply before servicing. To disconnect all sources of supply, follow this procedure:

1. Set the Automatic Operation switch on the dead front of the ATS to **Disable**.
2. Set the Source 1 switch on the ATS to OFF.
3. Set the Source 2 switch on the ATS to OFF.
4. Set the main Source 1 circuit breaker to OFF.
5. Set the main Source 2 circuit breaker to OFF.
6. If Source 2 is a generator, set the generator control switch to OFF. If OFF is not an option, set the generator control switch to **Manual**.

Operating environment

The ATS is designed for indoor use only; protect from water and conductive contaminants.

Temperature: 23 to 104°F (–5 to 40°C)

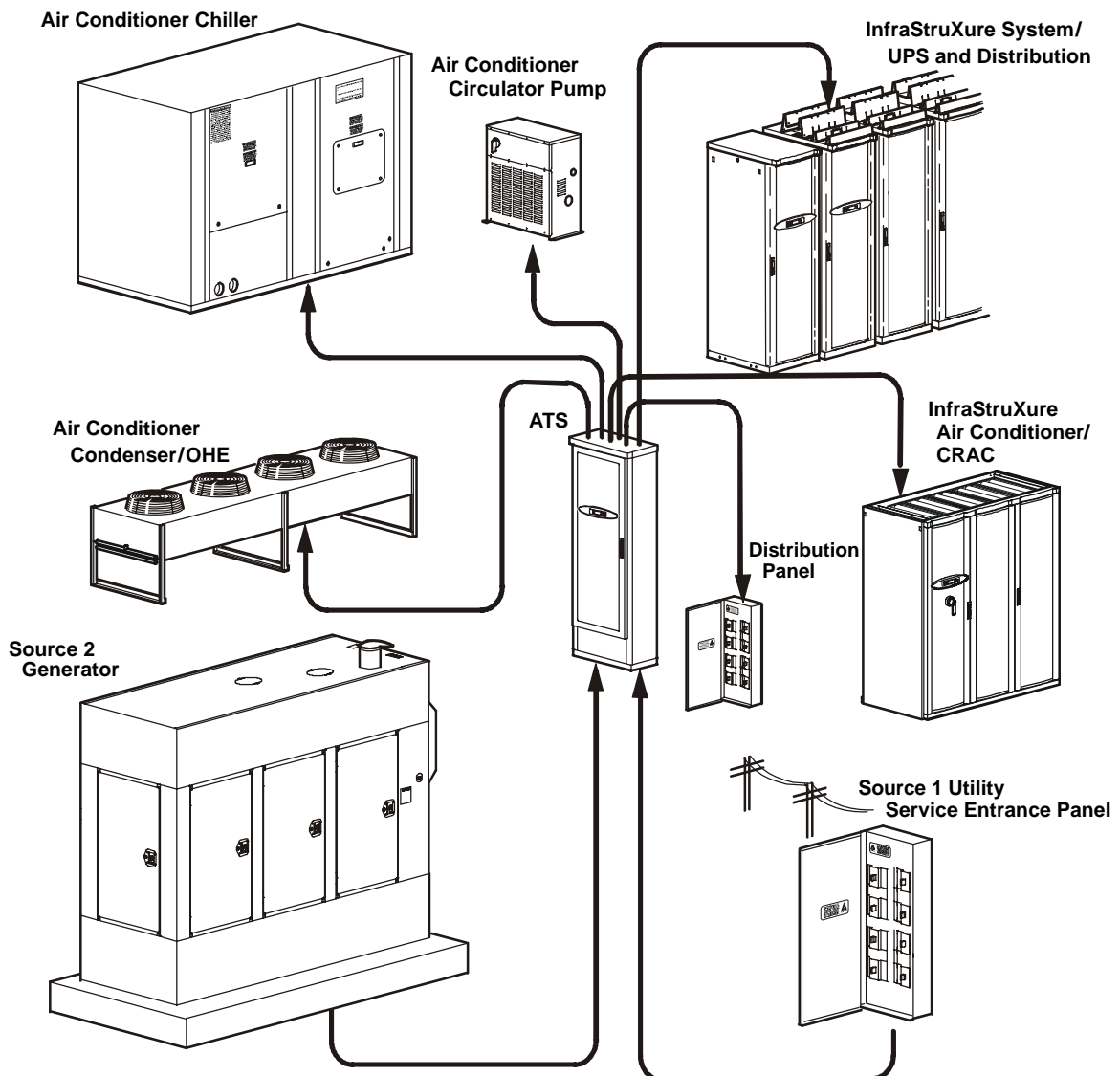
Humidity: 0–95 %, non-condensing

Elevation: 6,562 ft (2000 m)

Overview

InfraStruXure Power Generation System

The InfraStruXure Power Generation System consists of a diesel-powered generator and a Smart Distribution Panel with Automatic Transfer Switch (ATS). The ATS is connected to both the utility (Source 1) and the generator (Source 2), with the utility as the preferred source. The ATS can alternatively be connected to a second utility. The ATS is designed for installation on the data center floor, which places power distribution closer to your data center equipment. Labels provide a quick visual indication of which ATS sub-feed breaker is supplying power to each piece of equipment. The diagram below provides examples of data center equipment that can be connected to the ATS.

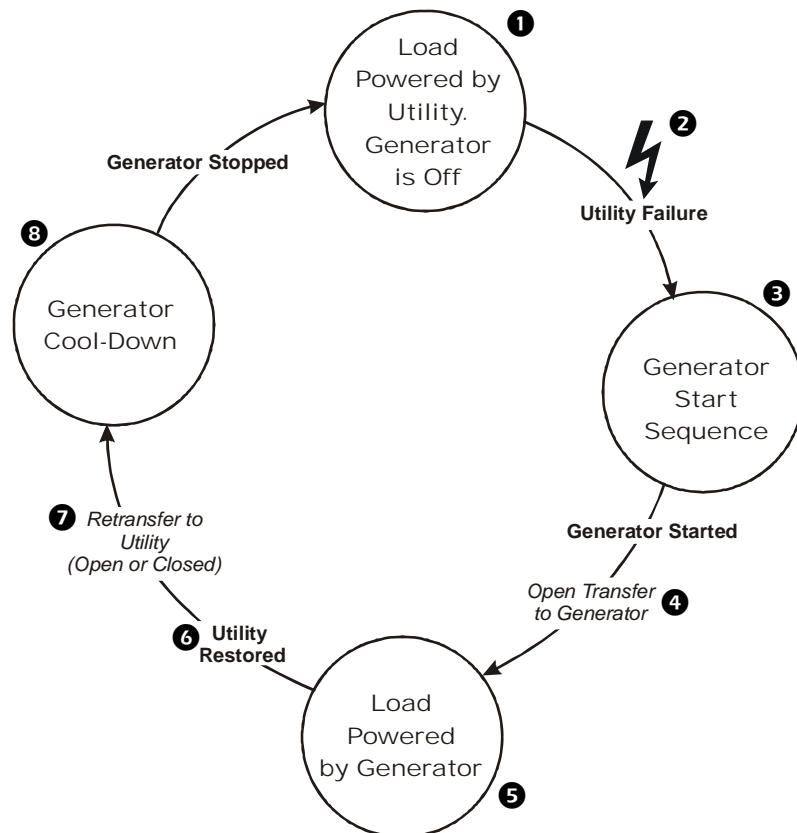


How the InfraStruXure Power Generation System Operates

Operation of the ATS during a utility failure when automatic operation is enabled

Your data center equipment is typically powered by the utility [Source 1] (❶), while the generator [Source 2] remains off. When the level of incoming utility power falls below a specified threshold (❷), the ATS signals the generator to start (❸). After the generator starts and attains the necessary power to support the load, the ATS performs an open transfer to the generator (❹).

The generator then continues to support your data center equipment (❺) until an acceptable flow of utility power is restored (❻). The utility power must remain stable for a specified length of time (**Line Stable** setting) and the generator must run for at least the duration of its minimum run-time (**Min on Gen** setting) before the load will be retransferred to the utility (❼). The retransfer to the utility can be either open or closed. Following retransfer, the generator cools down (❽) and eventually stops.



For more information.

See page 33 for a description of how the ATS determines the **line quality is bad**.

See page 7 for a detailed description of the generator **start sequence**.

See page 8 for detailed descriptions of **open and closed transfers**.

See page 7 for a detailed description of **generator cool-down**.

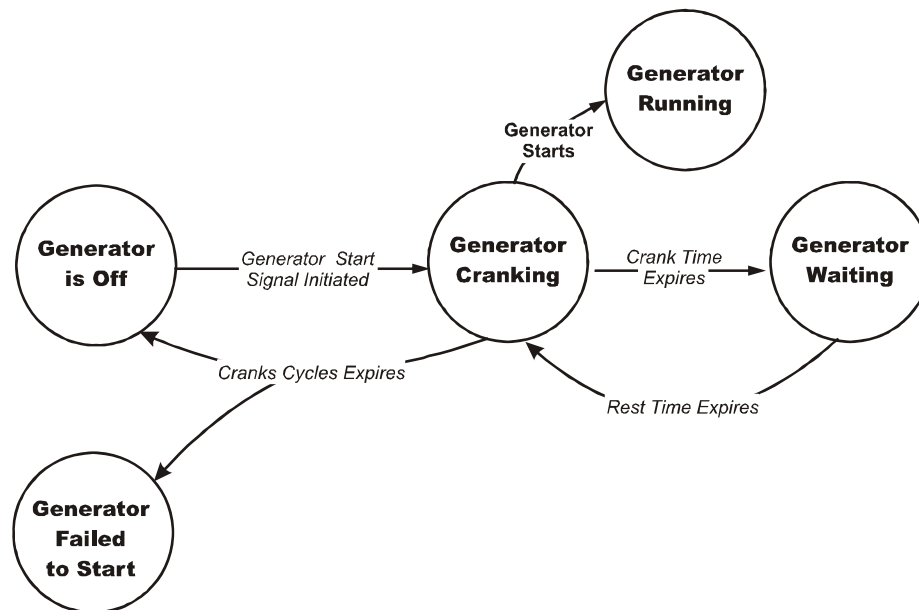
See page 35 for information about the **Line Stable** setting.

See page 35 for information about the **Min on Gen** setting.

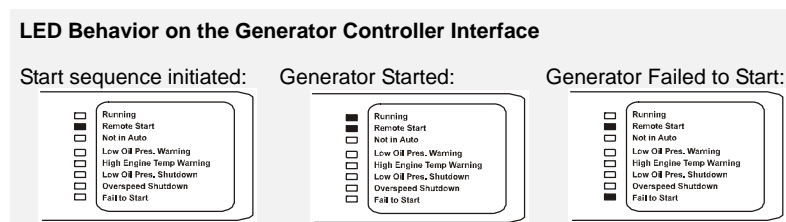
Generator start sequence

The generator start sequence is followed only if the **Crank** setting in the **Operating Settings** menu on the **Generator Settings** screen on the ATS display interface is set to **Yes**. If enabled, the following sequence will occur:

After a start signal is initiated, either by the ATS or manually, and the generator battery is good, the generator engine will crank and the generator should start. If the generator does not start, it will crank for the length of the **Crank Time**, and then rest for the length of the **Rest Time**. The generator will repeat this pattern for the number of times set in **Crank Cycles** before discontinuing further attempts to start. Check the messages on the display interface for reasons why the generator did not start.



On the generator controller interface, the LEDs track conditions during the start sequence:



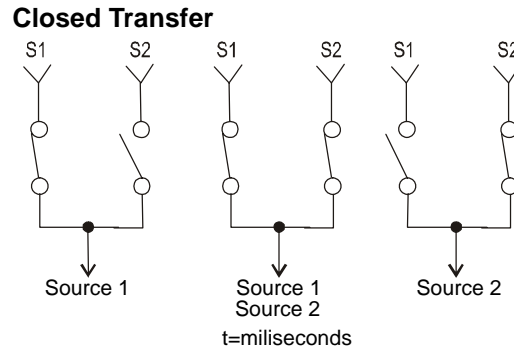
Generator cool-down

After the generator has finished powering the load and utility power has been restored, the generator will enter a 60-second cool-down period. **NOTE:** *This 60-second cool-down period is a recommendation from the generator manufacturer. The specified 60-second cool-down period can only be re-adjusted (at the ATS) by an APC service technician.*

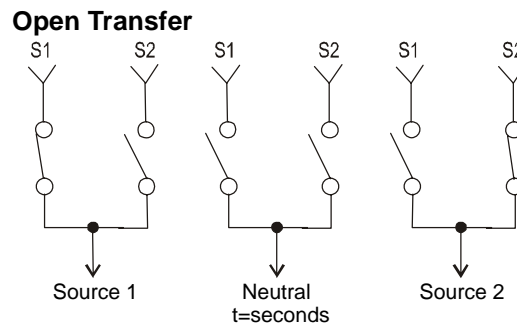
Open and closed transfers

When transfers are not occurring, one switch is ON and one switch is OFF.

During a closed transfer, the second switch will turn ON before the first switch turns OFF, creating a brief period of time when both switches are ON.



During an open transfer, the first switch will turn OFF before the second switch turns ON, creating a period of time when neither source is connected. This period is commonly referred to as neutral time. Neutral time is defined by the configurable **Open Xfer Time**.



You can set whether or not to **Allow Closed** transfers under the **Transfer Setup** item on the **ATS Setup** menu on the display interface (see page 35 for details about these settings). If the **Allow Closed** setting is **Yes**, the ATS will always seek to perform closed transfers. In order for a closed transfer to occur, the voltage and frequency for both sources must be acceptable and both sources must be synchronized. The ATS monitors both sources for synchronization before transferring. If the time it takes for the sources to become synchronized exceeds the configured **Max Sync Time**, the ATS will perform an open transfer instead. During a closed transfer, the ATS also takes into account the time it takes for the switch to actuate. This results in a seamless transfer in which non-UPS-protected equipment is uninterrupted and the UPS time on battery is reduced or even eliminated.

If the **Allow Closed** setting is **No**, the ATS will never perform closed transfers; it will only perform open transfers (see page 35 for details about these settings).

Fuel monitoring/runtime calculation

Fuel monitoring is a unique feature of the InfraStruXure Power Generation System. Fuel level is monitored at the generator (if purchased through APC) and load is measured at the ATS. These measurements are used to calculate runtime, as explained in the following paragraph:

Fuel is monitored by a level sensor in the generator fuel tank (calibrated to the bottom of the tank) that changes readings every $\frac{1}{2}$ -inch of fuel-level change. From these fixed-level points, the ATS counts the number of gallons of fuel used (based on load over time) and subtracts this amount from the fixed-level fuel amount to provide an accurate estimate of fuel level. Runtime is then calculated based on the fuel-usage rate at the current load and the remaining fuel in the tank. Once a new fuel-level point is reached, the value of the calculated fuel used is reset and the computation begins again.

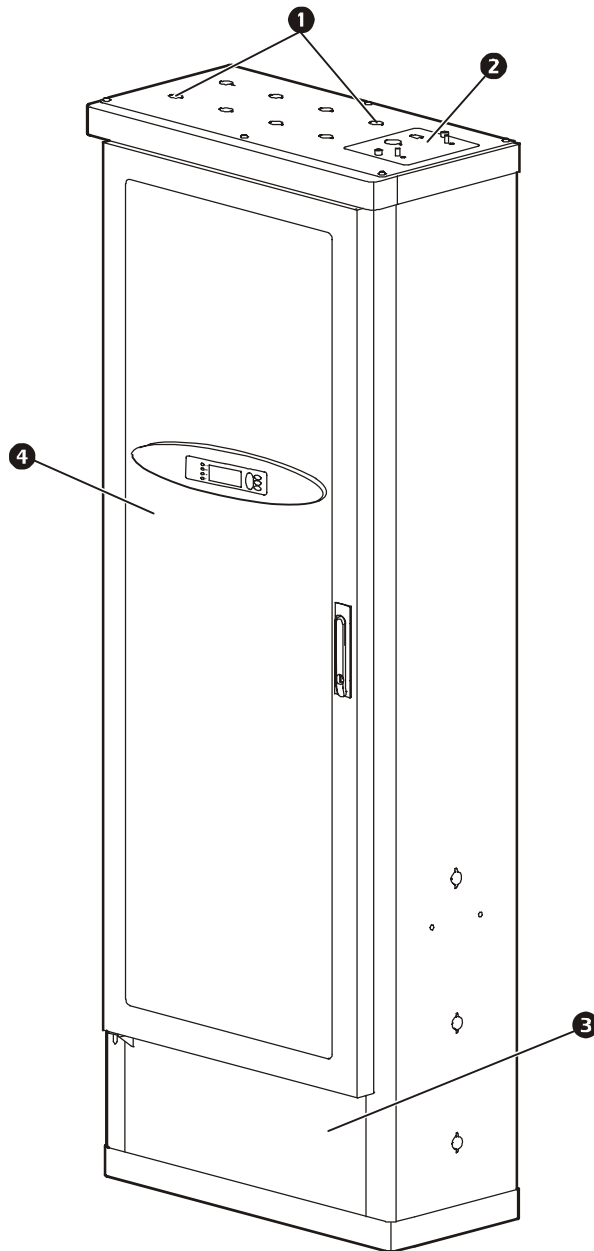
The **Fuel Level** and **Runtime Estimate** are displayed on the **Generator Status** screen on the ATS display interface. In addition, the following **Fuel Alarm Limits** are displayed in the **Alarms** menu. Corresponding values can be set for these limits:

Percent Fill: If the amount of fuel as a percentage falls below this value, an alarm condition exists.

Runtime: If the estimated runtime falls below this value, an alarm condition exists.

Smart Distribution Panel with ATS

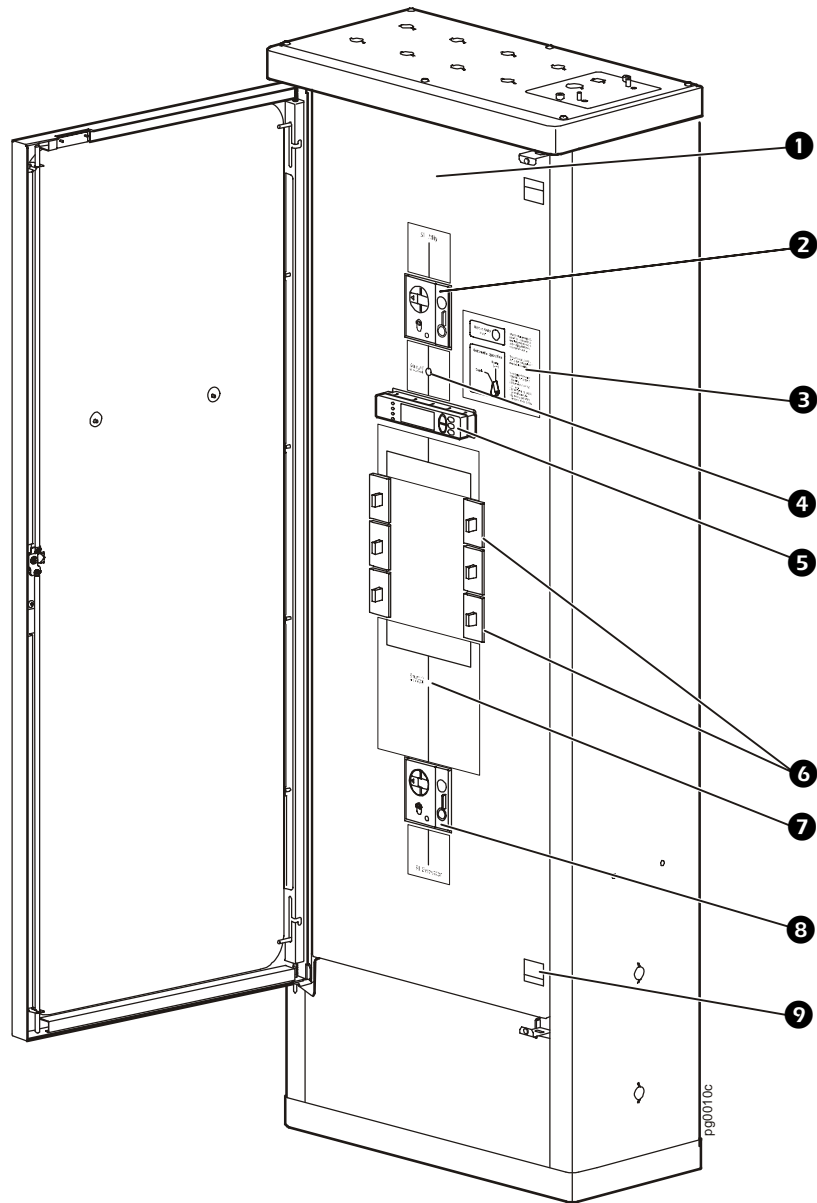
Front view, door closed



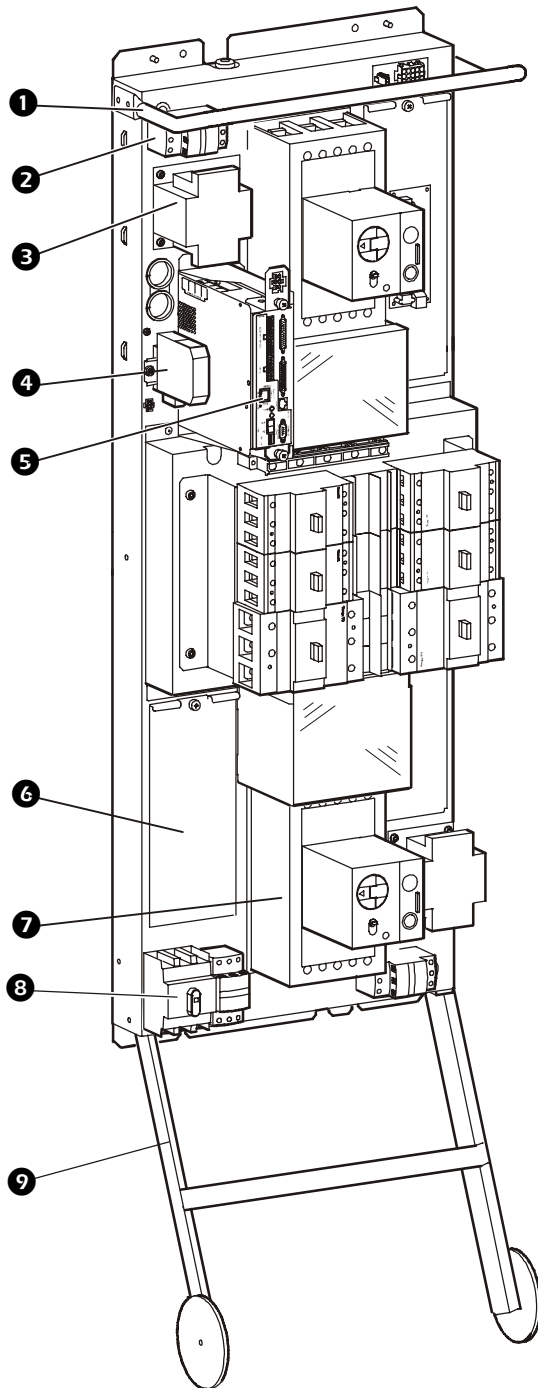
- ❶ **Knockouts** are provided on the roof, the sides, and the floor of the ATS for running utility and generator input wires and for distributing power to equipment in your data center. Connecting conduit to the ATS does not require drilling. Use a knockout punch to enlarge a knockout, if necessary.
- ❷ The **user connection plate** is attached to the ATS monitoring unit. The plate can be removed, simplifying access to input contact, relay output, network, and EPO connections. These connections can likewise be routed through a knockout in the plate (see “User connection plate” on page 16 for more information) to avoid wiring complications.
- ❸ The **bottom access panel** can be removed for better access to the panel board. Use a #2 Phillips screwdriver to remove the two M6 flat-head screws securing the panel to the enclosure.
- ❹ The perforated steel **front door** protects against ready access to the switches, the circuit breakers, and the display interface (see page 29). To access the display interface without opening the front door, simply remove the display’s Plexiglas covering (see page 67 for instructions).

Front view, door open

- ❶ Remove the **dead front** to obtain access to the panel board for maintenance and wiring.
- ❷ The **Source 1 motorized switch** (see “Motorized switches” on page 15) controls operation of the Source 1 input switch.
- ❸ The **automatic operation control panel** is used to set the generator to automatic operation or, alternatively, to remove the generator from automatic operation (see “Automatic operation control panel” on page 16).
- ❹ The **Source 1 lamp** lights green when the Source 1 switch is ON (closed).
- ❺ The **display interface** provides a local interface for viewing status data, configuring settings, and operating the ATS. The display interface has an LCD, a five-button panel, basic status lights, and a beeper (see “Display Interface” on page 29 for detailed information about the contents and operation of each screen).
- ❻ The **sub-feed output breakers** provide power to equipment in the data center (see page 68 for detailed information about installing these breakers).
- ❼ The **Source 2 lamp** lights green when the Source 2 switch is ON (closed).
- ❽ The **Source 2 motorized switch** (see “Motorized switches” on page 15) controls operation of the Source 2 input switch.
- ❾ Use the **latches** to open the dead front.



ATS panel board, left side



- ❶ The **handle** aids removal of the panel board assembly from the ATS enclosure. At least two people are required to remove the panel board assembly (refer to the *Electrical Installation Manual* for instructions).
- ❷ The **Source 1 fuse block** regulates input to the Source 1 control transformer for subsequent powering of the Source 1 motorized switch and ATS monitoring unit.
- ❸ The **Source 1 control transformer** outputs 120 VAC and 18 VAC to the Source 1 motorized switch and the ATS monitoring unit after stepping down the 480 V or 208 V input.
- ❹ The **communication converter** allows the generator and the ATS to communicate.
- ❺ The **ATS monitoring unit** houses a central board assembly that communicates with several monitoring boards located throughout the ATS (see “ATS monitoring unit” on page 17 for detailed information).
- ❻ Behind this **access panel** is the ATS interface circuit board. Use a Phillips or standard screwdriver to remove the panel.
- ❼ The **Source 2 input switch** accepts input wires from the generator (refer to the *Electrical Installation Manual* for connection instructions).

WARNING: Only a certified electrician should connect the generator to the ATS!

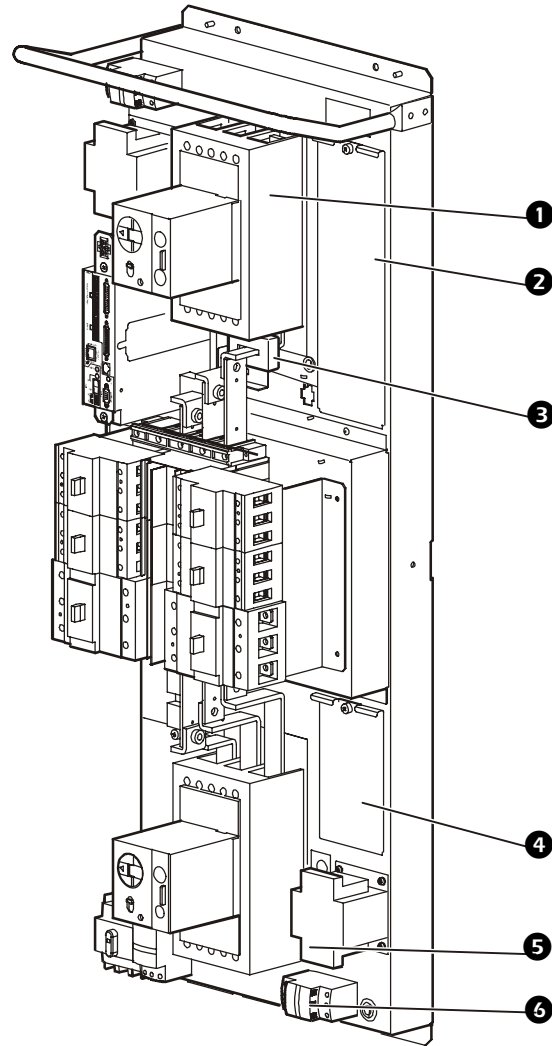
- ❽ This **switch and fuse block** regulate the 120 VAC supply to the generator for powering the block heater and battery charger.
- ❾ The **wheel extensions** on the panel board assembly allow removal of the assembly during installation. Removing the panel board assembly makes it easier to pull wires into the ATS.

ATS panel board, right side

- ❶ The **Source 1 input switch** accepts input wires from the utility (refer to the *Electrical Installation Manual* for connection instructions).

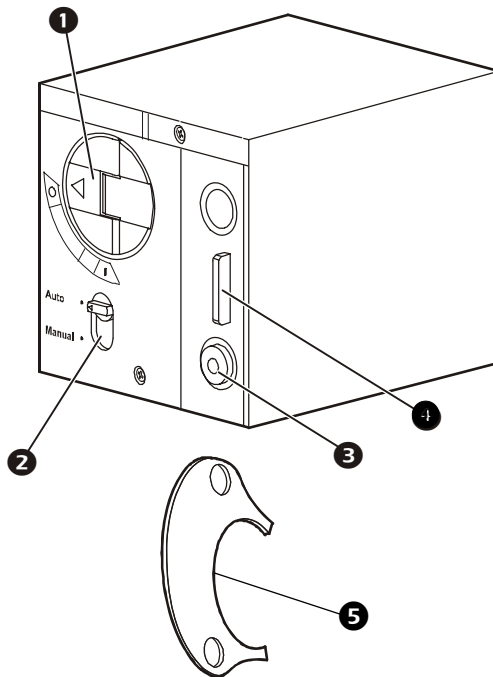
WARNING: Only a certified electrician should connect utility power to the ATS!

- ❷ Behind this **access panel** are the Source 1 volt-sensing circuit board and the distribution panel volt-sensing circuit board. Use a Phillips or standard screwdriver to remove the panel.
- ❸ The **Source 1 current transformers** monitor the input current of each incoming phase from the utility. The data gathered from these transformers is displayed on the *Total Load by Phase* screen, which is accessed through the *Load Meter* menu on the display interface.
- ❹ Behind this **access panel** is the Source 2 volt-sensing circuit board. Use a Phillips or standard screwdriver to remove the panel.
- ❺ The **Source 2 control transformer** outputs 120 VAC and 18 VAC to the Source 2 motorized switch after stepping down the 480 V or 208 V input.
- ❻ The **Source 2 fuse block** regulates input to the Source 2 control transformer for subsequent powering of the Source 2 motorized switch.



ATS Component Details

Motorized switches



- ❶ The **operating lever** indicates the present position of the motorized switch [OFF (○), TRIP, or ON (I)]. This lever is also used during manual operation of the switch (see “Emergency Manual Operation” on page 22 for proper operating procedures).
- ❷ The **on/off selector** allows the operator to choose whether or not the motorized switch controls the input switch. The selector should only be used for the purpose of implementing emergency manual operation (see page 21 for more information).
- ❸ Pressing the **trip button** immediately trips the motorized switch. If this button is pressed during automatic operation, the operating lever will move to the OFF (○) position.
WARNING: Do not press this button while load is connected!
- ❹ When the motorized switch is in the OFF (○) position, attach a lock-out tag to the **withdrawal prevention lock** for added safety.
- ❺ The **operating lever key** is used during manual operation of the motorized switch to assist in turning the operating lever. The key is provided in the hardware bag with the ATS.

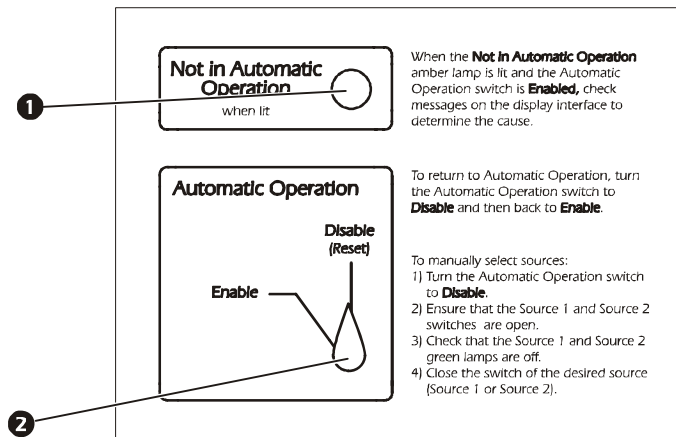


Before operating the motorized switches, review “Emergency Manual Operation” on page 22. Failure to follow proper procedures could cause personal injury or damage to the equipment.

Automatic operation control panel

For more detailed information concerning Automatic Operation of the InfraStruXure Power Generation System, see “Automatic Operation” on page 19.

- ❶ The **Not in Automatic Operation** LED is lit when the ATS is NOT in automatic operation. This typically occurs when the automatic operation switch is set to **Disable**. In rare instances, the **Not in Automatic Operation** LED will be lit when the automatic operation switch is in the **Enable** position (see page 21 for more information).

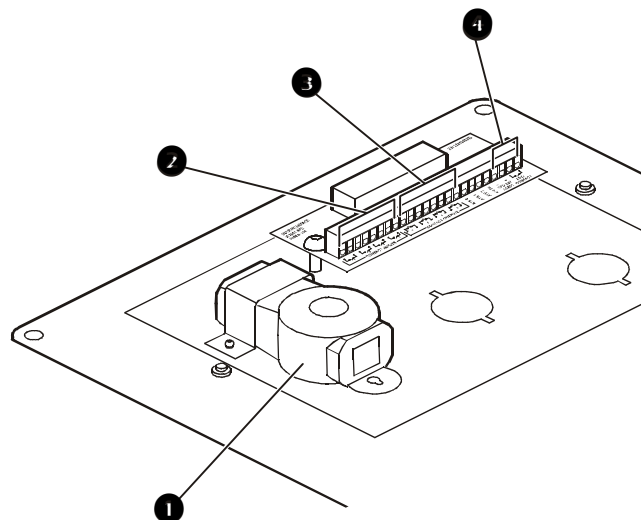


- ❷ Use the **Automatic Operation** switch to select whether the generator should automatically turn on after a loss of power.

User connection plate

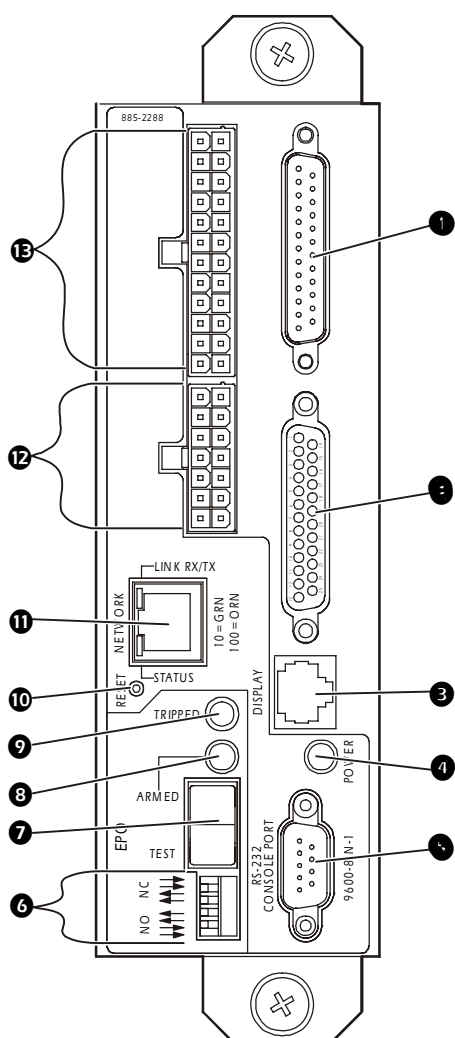
For location and description of the user connection plate, see number 2 on page 11. For clarity, the plate is shown facing upwards, as opposed to its factory-installed downward-facing position. The user interface board, the primary component on the plate, accepts most connections described below.

- ❶ Connect the ATS to either the network or the InfraStruXure Manager through the **surge-protected ethernet port**. This port protects your network connection from power surges.
- ❷ The user interface board has four **input contact connections** for monitoring Normally Open (NO) or Normally Closed (NC) dry contacts (see page 46 and page 61 for more information).
- ❸ The user interface board has four **relay output connections** to accommodate NO or NC dry contacts (see page 46 and page 61 for more information).



- ❹ Connect an Emergency Power-Off switch at one of the three **EPO connection** choices: 24 VDC, 24 VAC, or contact closure (see page 63 for more information).

ATS monitoring unit



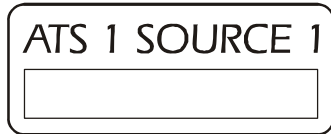
- ❶ This port connects to the Source 2 volt-sensing circuit board, the Source 1 volt-sensing circuit board, the Source 1 current transformers, and the distribution panel volt-sensing circuit board.
- ❷ This port connects to the ATS interface circuit board.
- ❸ The **display port** (RJ-45) connects the monitoring unit to the display interface.
- ❹ The **power LED** indicates whether the monitoring unit is receiving power.
- ❺ The **console port** (DB-9) is used to configure items relating to servicing and for communication with the generator (see item 4 on page page 13).
NOTE: A laptop computer can be connected to this port for configurations.
- ❻ The **EPO DIP switches** configure the EPO input for the type of EPO switch that is connected: Normally Open (NO) or Normally Closed (NC).
- ❼ When the **EPO Arm/Test rocker** is in the **Test** position, engaging the EPO switch will not cause the load to be shut down. When the rocker is in the **Armed** position, engaging the EPO switch turns OFF the ATS Source 1 and Source 2 switches and engages the generator's emergency stop button. When the EPO switch is engaged, the **Not in Automatic LED** on the ATS is lit (see page 64 for more information about testing the EPO switch).

- ❽ The EPO **Armed LED** is lit green when the rocker is in the **Armed** position. The LED is dark when the rocker is in the **Test** position.
- ❾ The EPO **Tripped LED** is lit red when the EPO switch is engaged (the EPO button is pressed), regardless of the state of the **EPO Arm/Test rocker**.
- ❿ The **reset button** resets the network processor; it does not reset the ATS or the monitoring unit.
- ⓫ The **network port** connects to the surge-protected ethernet port on the user connection plate (see page 16 for more information about the surge-protected ethernet port).
- ⓬ This port connects to the ATS interface circuit board.
- ⓭ The optional **User/EPO Contacts** port is connected to the user interface board on the user connection plate attached to the roof of the ATS. This port supports relay outputs (4), input contacts (4), and one EPO input (see page 16 for more information).

ATS label kit



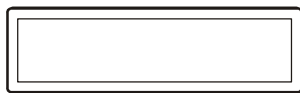
ATS Label—Place this label on the outside of the ATS enclosure to identify the ATS, and to associate it with the appropriate source: either Source 1 or Source 2.



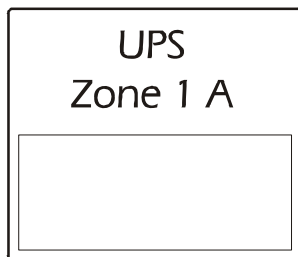
Source Label—Use a *Source 1* label at the primary utility breaker to identify which ATS it is feeding. Use a *Source 2* label in instances where a secondary utility breaker is employed instead of a generator.



Generator Label—Use these labels (3 total) at the generator to identify which ATS it is feeding. Place one label on each long side of the generator near the brand name labels, and place one label on the door where the generator controller is located.



Single-Pole Label—Use these labels with each single-pole breaker on the ATS distribution panel to identify which data center equipment it is feeding. Use the marker (supplied) to write on the label.



Three-Pole Breaker Label—Use these labels with each three-pole breaker on the ATS distribution panel to identify which data center equipment it is feeding. Use the marker (supplied) to write notes on the lower portion of the label. The labels are customized for typical components in an InfraStruXure system. Blank labels are also included for components that do not have pre-marked labels.



Front Bezel Label—If not employing a generator for Source 2, use one of these labels to replace the *Generator Power System* label on the left-hand side of the bezel. You can use either the *Automatic Transfer Switch* or the *Standby Power System* label to describe your system.



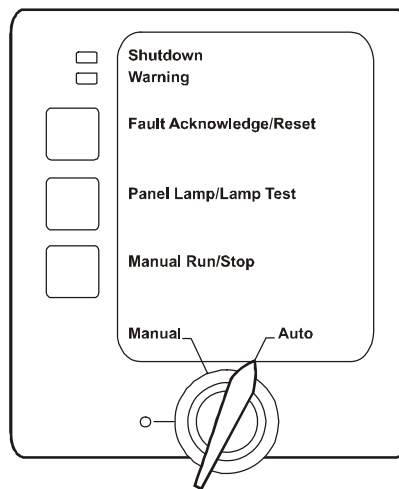
ATS Dead Front Source Label—Use these alternate labels for Source 1 and Source 2 if you do not want *Utility* and *Generator* to describe your sources. These labels allow you to use *Primary* and *Secondary* or *Normal* and *Alternate* to describe Source 1 and Source 2.

Operation

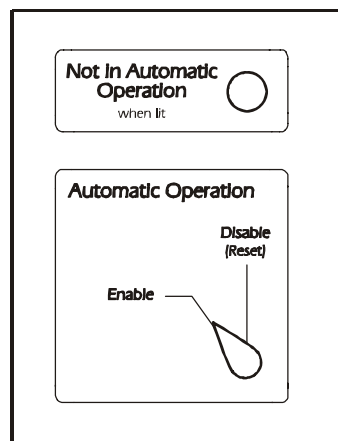
Automatic Operation

How to place the InfraStruXure Power Generation System in automatic operation

1. Ensure utility power is available. If the utility is not available, the ATS will signal the generator to start.
2. Ensure the **○/Manual/Auto** switch on the generator control panel is in the **Auto** position.



3. Set the ATS Automatic Operation switch to **Enable**.



4. Ensure the **Not In Automatic Operation** LED is unlit (see page 21 for information about uncommon behavior of this LED).

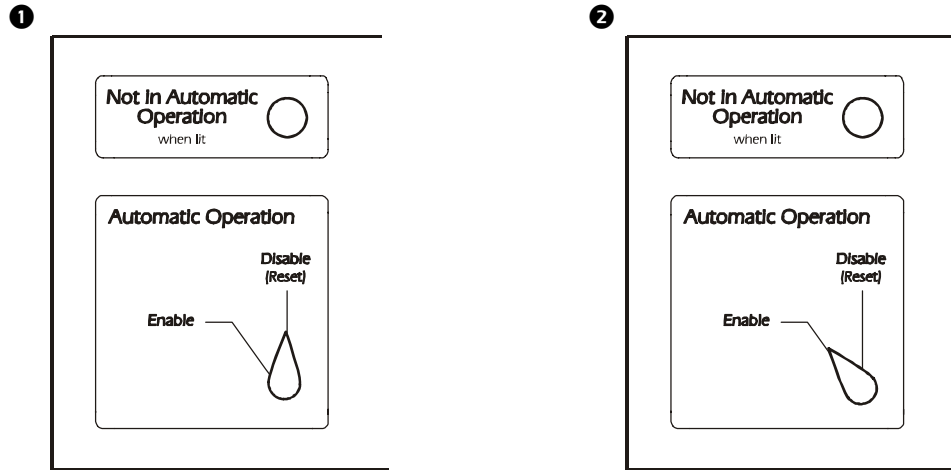


“How the InfraStruXure Power Generation System Operates” on page 6 summarizes automatic operation of the InfraStruXure Power Generation System.

How to reset automatic operation on the ATS and on the generator

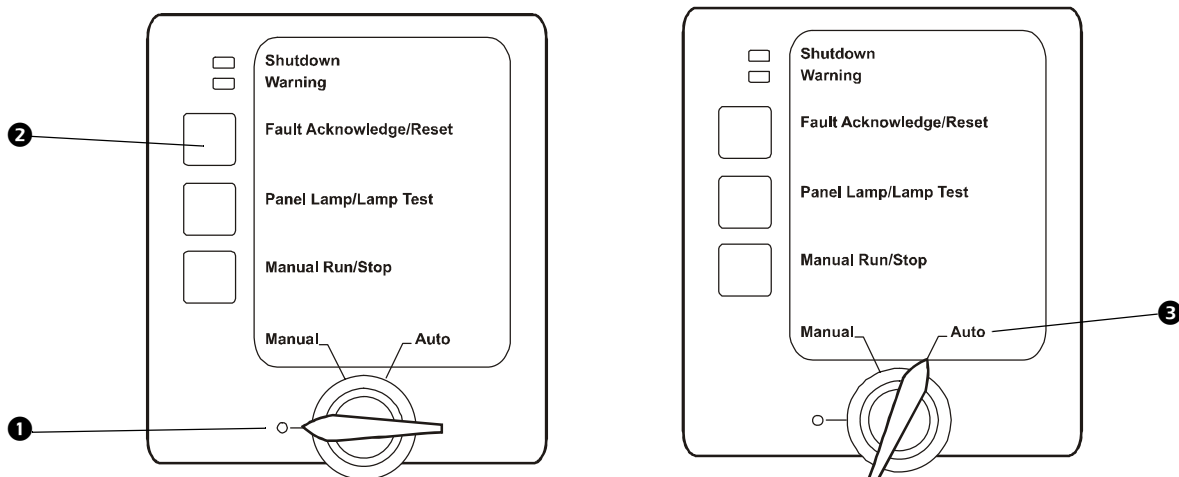
Resetting automatic operation on the ATS. If the **Not in Automatic Operation** LED is lit and the **Automatic Operation** switch is in the **Enable** position, you will need to reset automatic operation after the event that caused this condition is corrected (see page 21 for a detailed description of events that might lead to this condition). You can also clear certain alarms by resetting automatic operation at the ATS (see “Clearing latched alarms” on page 44 for more information).

To reset automatic operation on the ATS, set the **Automatic Operation** switch to **Disable (1)** and then back to **Enable (2)**.



Resetting automatic operation on the generator. If the ATS display interface reports a generator shutdown alarm and the **Alarm** LED is lit red, you must reset automatic operation on the generator to clear the alarm (the **Shutdown** LED on the generator control panel will also be lit red). Events that lead to this condition include engaging the data center EPO switch and engaging the E-stop button on the generator. If any EPO was engaged, the switch must be disengaged before automatic operation can be reset. If shutdown was not caused by an EPO, contact APC customer support (see the back cover of this manual). To reset automatic operation on the generator:

1 Set the **0/Manual/Auto** switch on the generator control panel to **0**. **2** Press the **Fault Acknowledge/Reset** button. **3** Return the **0/Manual/Auto** switch to **Auto**.



Problem—loss of automatic operation

Typically, the **Not In Automatic Operation** LED tracks the state of the **Automatic Operation** switch (e.g., the LED is lit when the **Automatic Operation** switch is in the **Disable** position). If the **Not In Automatic Operation** LED is lit while the **Automatic Operation** switch is in the **Enable** position, check messages on the display interface to determine which of these conditions exist:

1. The ATS unsuccessfully attempted to actuate either the Source 1 or Source 2 switch. This identifies the existence of one of the following situations:
 - The Source 1 switch cannot turn ON (closed)
 - The Source 1 switch cannot turn OFF (open)
 - The Source 2 switch cannot turn ON (closed)
 - The Source 2 switch cannot turn OFF (open)

When the ATS cannot actuate a switch, it will attempt to actuate the switch several more times before discontinuing further attempts. There are two causes of this condition:

- *The load is receiving power from the utility, and the Source 1 switch trips.*

When the Source 1 switch trips, the ATS will try to reclose the switch. If the switch cannot be closed, the ATS will start the generator and then close the Source 2 switch. The load will be powered by the generator and the ATS will revert to *Not in Automatic Operation* mode until it is reset (see page 20).

- *The load is receiving power from the generator, and the Source 2 switch trips.*

When the Source 2 switch trips, the ATS will try to reclose the switch. After several attempts, one of two things will happen depending on whether utility power is available:

- If utility power is not available, the generator will continue to run until utility power becomes available. Once utility power is available, the ATS will switch to the utility and turn off the generator. The utility will supply power to the ATS, and the ATS will remain in *Not in Automatic Operation* mode until automatic operation is reset (see page 20).
- If utility power is available, the ATS will switch to the utility and turn off the generator. The utility will supply power to the ATS, and the ATS will remain in *Not in Automatic Operation* mode until automatic operation is reset (see page 20).

2. The data center EPO switch that is connected to the ATS EPO interface was engaged.

When the data center EPO is engaged, the Source 1 and Source 2 switches are tripped open. The generator's emergency stop signal becomes engaged and the ATS is no longer supplying output power. The ATS immediately goes into *Not in Automatic Operation* mode and stays in this mode until the system is reset. To reset the system, disengage the data center EPO switch and reset automatic operation on the generator and on the ATS (see page 20).

Emergency Manual Operation

Warning—before you operate the ATS manually

The procedures in this section only apply to situations where automatic operation through the ATS is impossible. One example would be the ATS monitoring unit's inability to function. If automatic operation through the ATS is impossible and you must power your load from the generator, follow the instructions in "How to power the load from the generator" on page 23.



The ATS switches should be operated manually **ONLY** when automatic operation is disabled. If automatic operation is enabled, the ATS will attempt to actuate the switches to return to the preferred source.

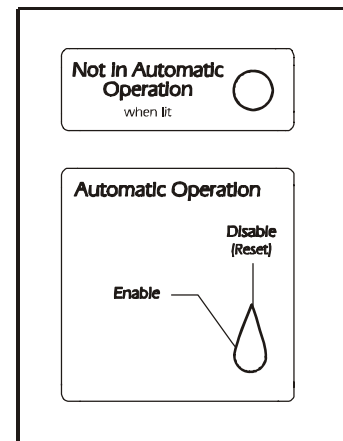


All transfers performed when automatic operation is disabled must be open transfers—BOTH switches must be turned OFF before the switch for the desired source is turned ON. Attempting a closed transfer will damage equipment.

How to power the load from the generator

1. Set the ATS **Automatic Operation** switch to **Disable**.

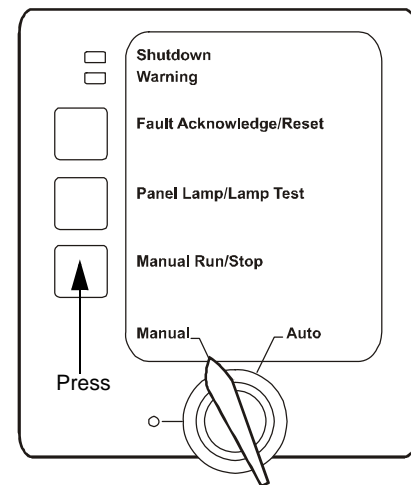
2. Ensure the Source 2 switch is OFF (○).



3. At the generator:

- a. Set the **○/Manual/Auto** switch on the generator control panel to **Manual**.
- b. Press the **Manual Run/Stop** button if you need to start the generator.

Pressing this button activates the engine control system and the starting system. The starter will begin cranking and, after a few seconds, the engine should start.

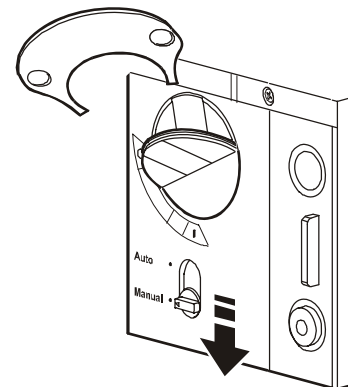


4. Turn the Source 1 switch OFF (○):

- a. Set the selector on the Source 1 switch to **Manual**.

The operating lever will swing out when the selector is set to **Manual**.

- b. Turn the Source 1 switch counterclockwise to OFF (○). Use the operating lever key for easier operation.

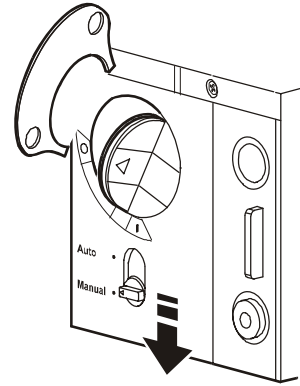


5. Turn the Source 2 switch ON (I)

- a. Set the selector on the Source 2 switch to **Manual**.

The operating lever will swing out when the selector is set to **Manual**.

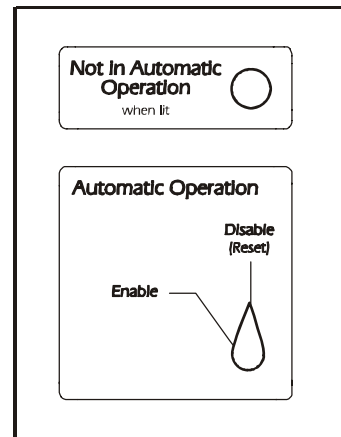
- b. Turn the Source 2 switch clockwise to ON (I). Use the operating lever key for easier operation.



- c. Close the operating levers on both the Source 1 and Source 2 switches, and then set the selectors back to **Auto** to lock the switches in place.
6. Ensure the generator is powering the load. The downstream UPS should not be using battery power and the load equipment should be operating.
7. Check the control panel of the generator for visible alarms indicating possible problems. Refer to the troubleshooting section of this manual, if necessary.

How to return to powering the load from utility

1. Ensure the ATS **Automatic Operation** switch is set to **Disable**.



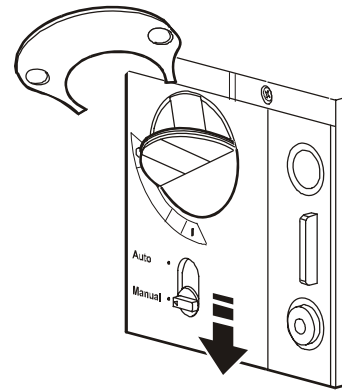
2. Ensure the Source 1 switch is OFF (○).

3. Turn the Source 2 switch OFF (○):

- a. Set the selector on the Source 2 switch to **Manual**.

The operating lever will swing out when the selector is set to **Manual**.

- b. Turn the Source 2 switch counterclockwise to OFF (○). Use the operating lever key for easier operation.

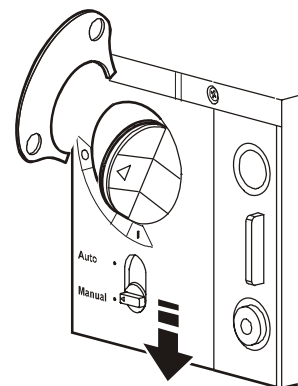


4. Turn the Source 1 switch ON (I):

- a. Set the selector on the Source 1 switch to **Manual**.

The operating lever will swing out when the selector is set to **Manual**.

- b. Turn the Source 1 switch clockwise to ON (I). Use the operating lever key for easier operation.



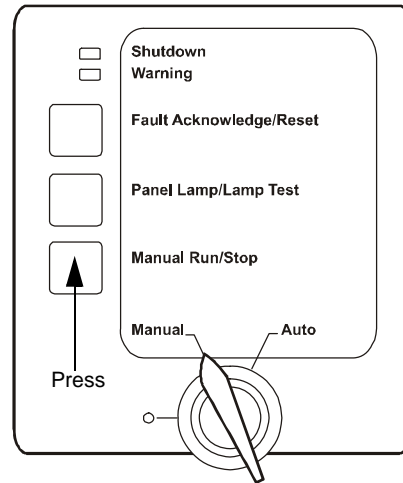
- c. Close the operating levers on both the Source 1 and Source 2 switches, and then set the selectors back to **Auto** to lock the switches in place.

5. Turn the generator OFF by following this procedure:

a. Ensure the **O/Manual/Auto** switch on the generator control panel is set to **Manual**.

b. Press the **Manual Run/Stop** button.

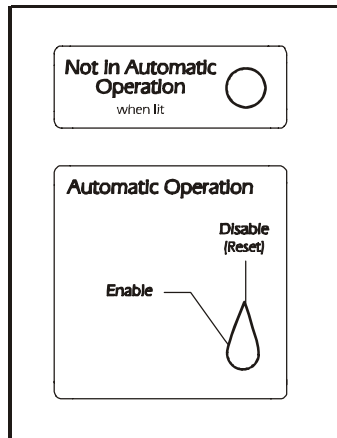
Pressing this button causes the generator to complete its normal shutdown sequence.



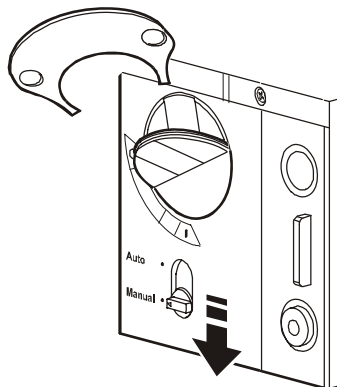
Total Power Off

Before servicing the system, follow the procedure below to disconnect all sources of power supply and reduce the risk of electric shock or injury:

1. Set the ATS **Automatic Operation** switch to **Disable**.



2. Set the Source 1 switch to OFF (○):
 - a. Set the selector on the Source 1 switch to **Manual**.
The operating lever will swing out when the selector is set to **Manual**.
 - b. Turn the Source 1 switch counterclockwise to OFF (○). Use the operating lever key for easier operation.

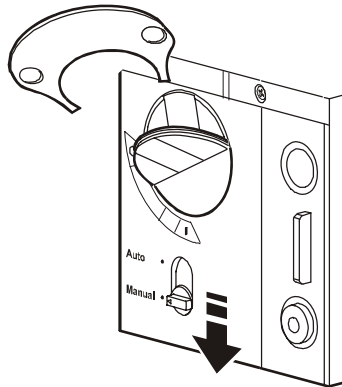


3. Set the Source 2 switch to OFF (○):

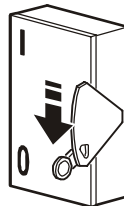
- a. Set the selector on the Source 2 switch to **Manual**.

The operating lever will swing out when the selector is set to **Manual**.

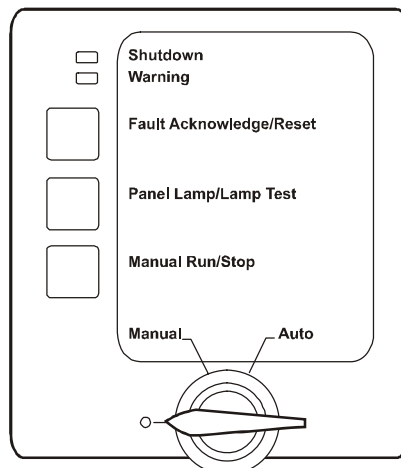
- b. Turn the Source 2 switch counterclockwise to OFF (○). Use the operating lever key for easier operation.



4. Set the main Source 1 circuit breaker to OFF (○).



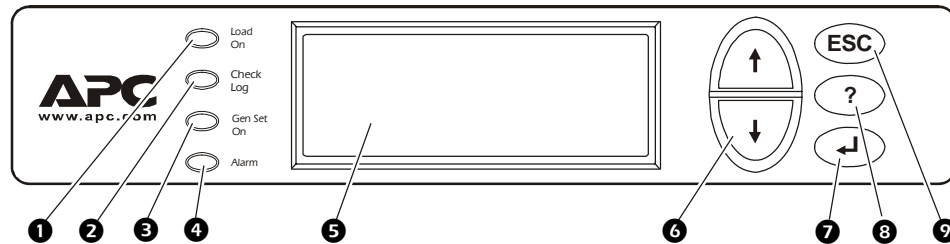
5. Set the main Source 2 circuit breaker to OFF (○). If Source 2 is a generator, set the generator control switch to OFF (○). If OFF is not an option, set the generator control switch to **Manual**.



Display Interface

Overview

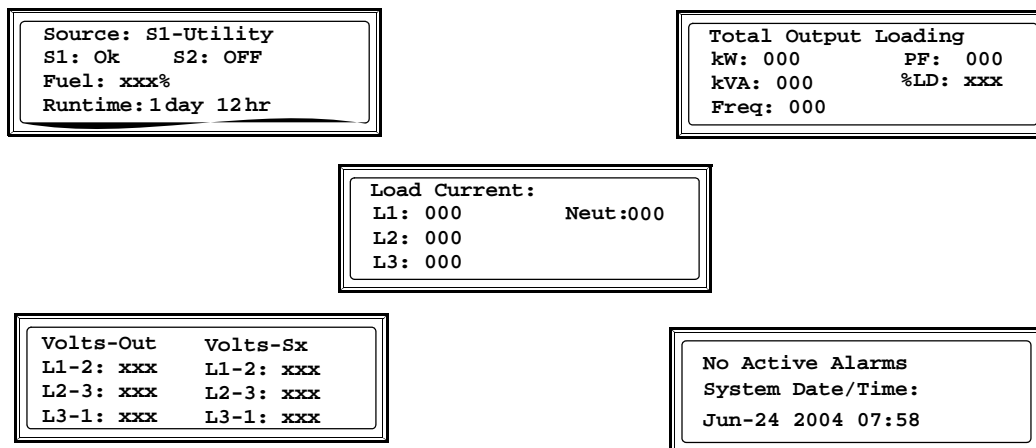
The ATS display interface is used to configure settings, set alarm thresholds, and provide audible and visual alarms.



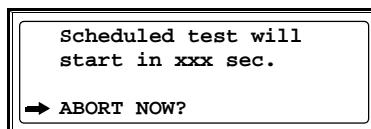
1	Load On LED	When lit green, all output phases are within the limits specified by the output alarm limit thresholds.
2	Check Log LED	When lit yellow, at least one new alarm condition has been detected.
3	Gen Set On LED	When lit green, the generator is running.
4	Alarm LED	When lit red, an alarm condition exists.
5	LCD	For viewing alarms, status data, instructional help, and configuration items.
6	Up and Down navigation buttons	Selects menu items and accesses information.
7	ENTER button	Opens menu items and inputs changes to system parameters.
8	HELP button	Launches context-sensitive help. Press the HELP button for information about each item on the screen and for instructions about performing certain tasks.
9	ESC button	Returns to previously displayed screen.

Top-level status screens

After system start-up, a brief introduction screen is displayed and then the display interface scrolls automatically and continuously through five screens of basic status information. Press the Up or Down arrows to interrupt automatic scrolling and view a specific status screen.

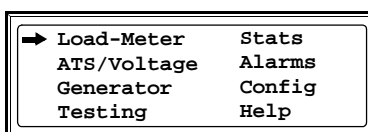


If you have scheduled one or more tests, the display interface shows the scheduled test screen (below) each time a self-test commences. To cancel an ongoing self-test, press ENTER when the selector arrow rests on the ABORT NOW? option.



Top-level menu screen

Press ENTER to open any of the following top-level menu screens:



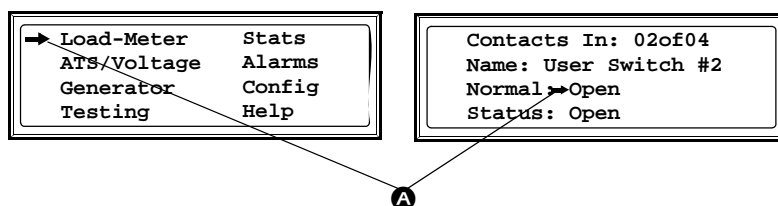
If the display interface is inactive for the time specified in the **Time-out** setting, it will revert to the initial basic monitoring screens.



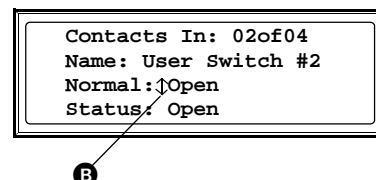
For descriptions of the top-level menu choices, see the sections devoted to each top-level menu starting on page 32.

Navigating through screens

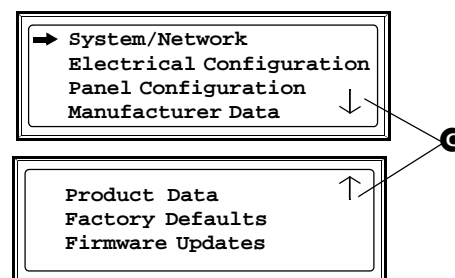
To open any screen, press the Up or Down arrow until the selector (A) rests next to your desired selection. Press ENTER to view the selected screen.



When configuring settings, press the Up or Down arrows until the selector (A) rests next to the setting you want to change, and then press ENTER. If the setting is a list of choices, an input arrow (B) will appear next to the setting. Press the Up or Down arrow until your desired change appears. Press ENTER to select the setting.



On some screens, continue arrows (C) indicate there are additional screens to view in the category. Press the Up or Down arrow to view these additional screens.



Password-protected screens

When configuring or changing settings, the display interface prompts you for your password. To enter your password:

1. Press the Up or Down arrow until the correct letter is displayed, and then press ENTER.



Note

After pressing ENTER, the character you entered is displayed as an asterisk and the input arrow moves to the next space. Select the next password character and then ENTER, etc.

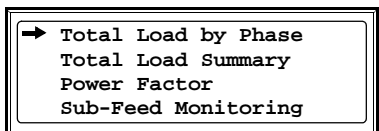


2. Press ENTER twice after entering your password.



See “System Password” on page 45 to change your password.

Load-Meter



Total Load by Phase

For each phase (**L1**, **L2**, **L3**), the following is displayed:

- kVA** The apparent power provided, in kilovolt-amps.
- I_{out}** The output RMS load current.
- %LD** The load as a percentage of the maximum allowable load.

Total Load Summary

For the total load supported, the following is displayed:

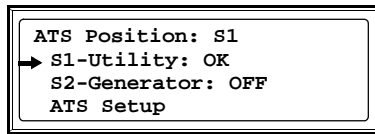
- kW** The active power drawn by the load, in kilowatts.
- kVA** The apparent power provided, in kilovolt-amps.
- Freq** The frequency, in hertz.
- PF** The power factor, or the ratio between active power and apparent power (kW/kVA), that is being supplied to the load.
- %LD** The load as a percentage of the maximum allowable load.

Power Factor

The following power factor data is displayed for each phase (**L1**, **L2**, **L3**):

- kVA** The apparent power provided, in kilovolt-amps.
- kW** The active power drawn by the load, in kilowatts.
- PF** The power factor, or the ratio between active power and apparent power (kW/kVA), that is being supplied to the load.

ATS/Voltage



ATS Position

One of the following options is displayed to describe the selected source:

- | | |
|-------------------|---|
| S1 | The Source 1 switch is ON (closed). Source 1 is connected to the output. |
| S2 | The Source 2 switch is ON (closed). Source 2 is connected to the output. |
| NEUT | The Source 1 and Source 2 switches are OFF (open). Neither source is connected to the output. |
| S1&S2! | The Source 1 and Source 2 switches are ON (closed). This is an alarm condition. |

S1-Utility

One of the following is displayed to describe the condition of the input from Source 1.

- | | |
|------------|--|
| OK | Source 1 is acceptable, as defined in the Transfer Points menu (see page 35). |
| BAD | Source 1 is not acceptable, as defined in the Transfer Points menu (see page 35). |

Press ENTER when the selector arrow rests at the **S1-Utility** item to display the following:

- | | |
|-------------------------|--|
| L1-2, L2-3, L3-1 | The Source 1 line-to-line input voltage. |
| L1, L2, L3 | The Source 1 line-to-neutral input voltage. These readings are only displayed on Wye systems. |
| Frequency | The frequency of the utility input, in hertz (Hz). |
| Qual | <p>Describes the quality of the input from Source 1. One of the following conditions is displayed:</p> <ul style="list-style-type: none">• Source Good: The source is acceptable, as defined in the Transfer Points menu.• Low Voltage: The input voltage is below the configured Low voltage Transfer Point on one or more of the phases.• High Voltage: The input voltage exceeds the configured High voltage Transfer Point on one or more of the phases.• Phase Imbalance: The percent voltage difference between two phases, as defined by the Phase Balance setting in the Transfer Points menu, has been exceeded.• Freq Range: The frequency is outside the configured Freq range, as defined in the Transfer Points menu.• Bad Rotation: The phase rotation does not match the configured Phase Sequence, as defined in the Transfer Points menu. |

Phase Sequence	Lists the phase rotation (e.g., A-B-C) of the Source 1 input.
-----------------------	---

S2-Generator

One of the following is displayed to describe the condition of the input from Source 2.

OK	Source 2 is acceptable, as defined in the Transfer Points menu (the generator is running).
OFF	The generator is not running.
BAD	Source 2 is not acceptable, as defined in the Transfer Points menu, even though the ATS is commanding the generator to run.

Press ENTER when the selector arrow rests at the **S2-Generator** item to display the following:

L1-2, L2-3, L3-1	The Source 2 line-to-line input voltage.
L1, L2, L3	The Source 2 line-to-neutral input voltage. These readings are only displayed on Wye systems.
Frequency	The frequency of the Source 2 input, in hertz (Hz).
Qual	<p>Describes the quality of the input from Source 2. One of the following conditions is displayed:</p> <ul style="list-style-type: none"> • Source Good: The source is acceptable, as defined in the Transfer Points menu. • Low Voltage: The input voltage is below the configured Low voltage Transfer Point on one or more of the phases. • High Voltage: The input voltage exceeds the configured High voltage Transfer Point on one or more of the phases. • Phase Imbalance: The percent voltage difference between two phases, as defined by the Phase Balance setting in the Transfer Points menu, has been exceeded. • Freq Range: The frequency is outside the configured Freq range, as defined in the Transfer Points menu. • Bad Rotation: The phase rotation does not match the configured Phase Sequence, as defined in the Transfer Points menu.
Phase Sequence	Lists the phase rotation (e.g., A-B-C) of the Source 2 input.

ATS Setup

Press ENTER when the selector arrow rests at the **ATS Setup** item to change the following settings:

- Transfer Points** The voltage-sensing point at which you would transfer to the other source, based on voltage and frequency.
- **S1-Utility:** The input voltage reading for Source 1.
 - **Low:** The low voltage limit that causes the ATS to switch from Source 1 to Source 2. Press ENTER to change this setting.
 - **High:** The high voltage limit that causes the ATS to switch from Source 1 to Source 2. Press ENTER to change this setting.
 - **Other Settings:** The settings on this screen determine when the source is OK, and define the quality of the source. Press ENTER when the selector arrow rests at this item to change the following settings or thresholds:
 - **Freq:** The frequency cannot vary beyond this configured range (+/- x.xx Hz).
 - **Phase Balance:** The percent voltage difference between two phases cannot exceed this configured setting (%).
 - **Phase Sequence:** The phase rotation (default is A-B-C) must match this configured setting.

- Transfer Setup** The following settings can be changed in this menu:
- **Open Xfers:** Defines how long BOTH the Source 1 and Source 2 switches will be OFF (open) during an open transfer (see page 8 for a definition of open transfers).
 - **Allow Closed:** Enables/disables closed transfers (see page 8 for a definition of closed transfers).
 - **Max Sync:** The maximum time allotted for the ATS to attempt a closed transfer before it performs an open transfer.
 - **ATS Delay Settings:** The time delay settings that affect transfers and retransfers.
 - **Gen Start:** The amount of time allotted between when the generator receives a start signal and when the generator starts (default is 0).
 - **Line Stable:** If the ATS switches to Source 2 after a failure in Source 1, and Source 1 is restored, the **Line Stable** setting is the amount of time (in seconds) allotted for Source 1 to become acceptable before the ATS returns to it (default is 3 minutes).
 - **Min on Gen:** The minimum time the generator must run before the ATS retransfers to utility (default is 15 minutes).

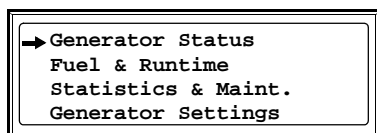
ATS Blocking

- **Transfer Blocking:** Defines conditions that will prevent the ATS from transferring from Source 1 to Source 2. The following is displayed on the Transfer Blocking screen:
 - **Block Transfer:** Lists configured input contacts that will prevent a transfer from occurring.
 - **Map:** Choose from the following input contacts to block a transfer:
 - C1: Contact 1
 - C2: Contact 2
 - C3: Contact 3
 - C4: Contact 4
 - **Apply Now:** After you have made changes on this screen, choose this option and press ENTER to save your changes.
- **Retransfer Blocking:** Defines conditions that will prevent the ATS from transferring from Source 2 to Source 1. The following is displayed on the Retransfer Blocking screen:
 - **Block Retransfer:** Lists configured input contacts that will prevent a retransfer from occurring.
 - **Map:** Choose from the following input contacts to block a retransfer:
 - C1: Contact 1
 - C2: Contact 2
 - C3: Contact 3
 - C4: Contact 4
 - **Apply Now:** After you have made changes on this screen, choose this option and press ENTER to save your changes.
- **Gen Start Blocking:** Defines input contacts that will prevent the generator from starting because of a line failure:
 - **Block Gen Start:** Lists configured input contacts that will prevent the generator from starting.
 - **Map:** Choose from the following input contacts to block the generator from starting:
 - C1: Contact 1
 - C2: Contact 2
 - C3: Contact 3
 - C4: Contact 4
 - **Apply Now:** After you have made changes on this screen, choose this option and press ENTER to save your changes.

Other Settings

- **S1 Name:** Create a unique name for Source 1 (maximum of 9 characters). The default is *Utility*.
- **S2 Name:** Create a unique name for Source 2 (maximum of 9 characters). The default is *Generator*.
- **Preferred:** Displays the preferred source (Source 1).

Generator



Generator Status

The following items are available on this menu:

- Generator Status** This screen displays the following conditions to describe the **Gen State**:
- **Off**: The generator is not running.
 - **Cranking**: The generator is starting.
 - **Running**: The generator is running.
 - **Idle**: The generator is running, but not supplying power to the load.
 - **E-Stop**: The Emergency Power-Off switch has been actuated on the generator or the ATS.
 - **Fault**: The generator is unable to start.
 - **No Com**: The ATS has lost communication with the generator.

Mode Sw provides the position of the generator's **O/Manual/Auto** switch. The switch must be in **Auto** for the generator to start, based on the state of the run/stop contact. **Auto**, **Manual**, or **Off** is displayed to describe the position of the switch.

The following settings can be accessed through this menu:

- **Engine Run**: Shows the current state of the run/stop contact, which signals the generator's engine to start and stop. The state can be **Run** or **Off**. Automatic control of this signal is disabled when the **Not in Automatic Operation** LED on the ATS is lit.
- **Engine Parameters**: View the following measured data relating to operation of the generator's engine:
 - Battery Voltage
 - Engine RPM
 - Oil Pressure
 - Coolant Level
 - Coolant Temperature
 - Oil Level

- Fuel & Runtime** This screen displays the following:
- **Type**: The type of fuel the generator uses (diesel).
 - **Tank Size**: The size of the fuel tank on the generator (in gallons or liters).
 - **Fuel Level**: The percentage of fuel left in the generator fuel tank.
 - **Runtime Estimate**: How much time (xx days zz hours) the generator can run based on the fuel level and load, and the load value (in kW) used to calculate runtime.
- Statistics & Maint.**
- **Lifetime Statistics**: Scroll through a list of items that accumulates over the life of the generator, including:
 - Last Maintenance Date
 - Engine Starts
 - Total kWh
 - Total Runhours

- **Maintenance Record:** Scroll through a list of items that accumulates after the maintenance record is reset, including:
 - Last Maintenance Date
 - Operating Days
 - Engine Starts
 - Total kWh
 - Total Runhours
- **Next Maintenance:** View the month and year of the next scheduled maintenance and the number of days remaining until the next scheduled maintenance. Reset the maintenance record so that the data in the **Maintenance Record** menu returns to zero.

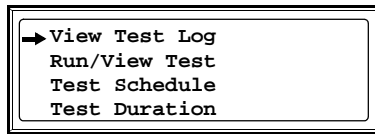
Generator Settings This screen allows you to access the following settings:

- **Operating Settings**
 - Start Delay The amount of time the generator waits after initiation of the start signal before it begins powering the load. This setting is configurable on the generator control panel (default is 0).
 - Stop Delay The amount of time between when the start signal is removed and when the generator stops. This setting is configurable on the generator control panel (default is 0).
 - Crank Settings The following settings can be changed in the generator service menus by service personnel.
 - **Crank:** Indicates whether the crank cycle is enabled. If the crank cycle is not enabled, the generator will continue attempting to start until the battery dies.
 - **Crank Cycles:** The number of crank cycles the generator will go through when attempting to start (default is 3).
 - **Crank Time:** The amount of time the generator will crank during a crank cycle (default is 15 seconds).
 - **Rest Time:** The amount of time the generator will rest after it cranks during a crank cycle (default is 15 seconds).

NOTE: APC does not recommend changing the default values of the generator settings described above.

- **Manufacturer Data**
 - Fuel System The type of fuel the generator uses (default is diesel).
 - Tank Size The size of the fuel tank on the generator (in gallons or liters).
 - Final Assy Date Date the generator was assembled at the factory.
 - Model Number Generator model number from Cummins®.
 - GenSet S/N The serial number of the generator.
 - Voltage Config Nominal input voltage (208 V or 480 V).
 - Alternator Freq Nominal frequency setting of the alternator output (50 or 60 Hz).
 - Gen kW Rating The power rating of the generator (80 kW or 125 kW).
- **Gen Output Adjust**
 - Voltage Displays the desired alternator output voltage (configurable on the generator control panel).
 - Frequency Displays the desired alternator output frequency (configurable on the generator control panel).

Testing



View Test Log

Displays all logged test results in a scrolling list. For each item, the screen provides the **Gen Start** test and the **Load Test** results with a date and time stamp of when the test occurred.

Run/View Test

Use this menu to run a test now, or to view a test that is in progress.

Engine Start Test

If a test is in progress, the screen displays **Test Progress** and the time remaining in the test. If you want to stop the test, select the **ABORT NOW?** item on this screen and then press ENTER.

If you want to run a start test now, select **Run Test Now** from the confirmation screen and then press ENTER. The test will run based on the parameters set on the **Test Duration** menu. If you do not want to run a start test now, choose **No** from the confirmation screen and then press ENTER.

System Load Test

If a test is in progress, the screen displays **Test Progress** and the time remaining in the test. If you want to stop the test, select the **ABORT NOW?** item on this screen and then press ENTER.

If you want to run a load test now, select **Run Test Now** from the confirmation screen and then press ENTER. The test will run based on the parameters set on the **Test Duration** menu. If you do not want to run a load test now, choose **No** from the confirmation screen and then press ENTER.

Test Schedule

Use this menu to schedule a test in the future.

Define Schedule

Set the test schedule by changing the following parameters:

- **Gen Start:** Choose when to perform a generator start test. Choices are **Never**, **Monthly**, **Weekly**, or **Daily**.
- **Day:** The choices for **Day** depend on the choice made for Gen Start:

→	Gen Start: Monthly
	Day: 1st Monday
	Time: 14:30
	Load Test: Monthly

If you chose a GenStart of Never: The Day is not configurable.

If you chose a GenStart of Monthly: Choose to perform the test on the **1st**, **2nd**, **3rd**, or **4th** week of the month on a specific day of the week.

If you chose a GenStart of Weekly: Choose to perform the test on any day of the week.

If you chose a GenStart of Daily: Choose to perform the test **Everyday**, on **Weekdays** (Monday through Friday), or on **Weekends** (Saturday and Sunday).

- **Time:** Set the time of day the test will run. The time is set on a 24-hour clock.
- **Load Test:** Choose to test the generator with the data center load applied. Choose to perform the load test **By Month**, **Monthly**, **Never**, or **All**.
*Choosing **Monthly** for the Load Test ensures this test will take place on the first occurrence of the Gen Start Test.*

Next Test

Lists the date and time of the next test.

Test Duration

The following items are available on this menu:

Warm Up

Set the amount of time, in seconds (up to 999), that the generator will warm up during a test.

Loaded

If the **Load Test** option is selected, set the amount of time, in minutes (up to 999), that the generator will run with the data center load applied.

Cooldown

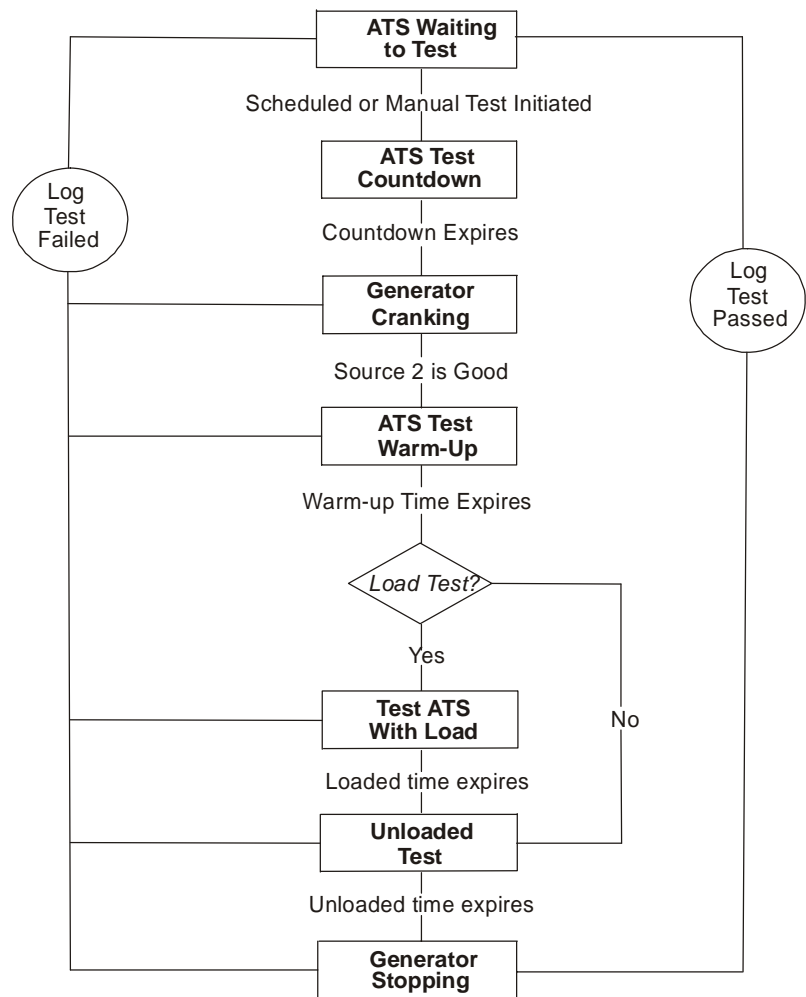
Set the amount of time, in seconds (up to 999), that the generator will cool down after the test.

How a test occurs

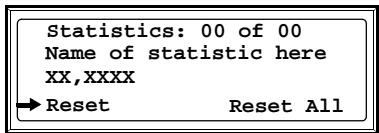
When a test is not in progress, the ATS waits for a test to occur. Initiate a test by scheduling one using the **Test Schedule** screen on the display interface, or by starting a test immediately through the **Run/View Test** screen. Once you have initiated a test, the ATS starts counting down until the next test will begin (the **Next Test** item on the **Test Schedule** menu). Once the **Next Test** time expires, the ATS will signal the generator to start. The generator will then crank in an attempt to start. If the generator does not start, the test fails and the ATS logs that the test failed. If the generator starts, and the ATS determines that Source 2 is OK, the test will begin with the configurable **Warm Up** time. Once the **Warm Up** time expires, the ATS determines whether or not you want to perform a **System Load Test**. This is a test the generator runs with the data center load applied.

If the test does not include a **System Load Test**, the ATS proceeds to the unloaded test stage. If the test includes a **System Load Test**, the ATS transfers to Source 2. The transfer can be open or closed, depending on how the **Allow Closed** setting is configured on the **ATS Setup** menu. The load test occurs for the length of the **Loaded** time and, once the loaded time expires, the ATS will retransfer to Source 1 and then proceed to the unloaded test stage.

During the unloaded test stage, the generator runs for the duration of the configurable **Unloaded Test** time. Once the **Unloaded Test** time expires, the generator stops and the ATS logs either that the test was successful or that it failed. The ATS displays test results on the **View Test Log** menu on the **Testing** screen.



Stats



Scroll through a list of items that accumulates after the statistics record is reset, including:

- **Open Xfer Count:** The number of open transfers since this statistic was reset.
- **Closed Xfer Count:** The number of closed transfers since this statistic was reset.
- **Generator Fuel Used:** The amount of fuel used since this statistic was reset.
- **Source 1 Bad Count:** The number of times Source 1 was not acceptable, as defined in the **Transfer Points** menu, since this statistic was reset.
- **S1 Low Volts Count:** The number of times the Source 1 input voltage went below the configured **Low** voltage **Transfer Point** on one or more of the phases since this statistic was reset.
- **S1 High Volts Count:** The number of times the Source 1 input voltage exceeded the configured **High** voltage **Transfer Point** on one or more of the phases since this statistic was reset.
- **S1 Bad Freq Count:** The number of times the Source 1 input voltage went outside the configured **Freq** range, as defined in the **Transfer Points** menu, since this statistic was reset.
- **S1 Imbalance Count:** The number of times the percent voltage difference between two phases, as defined by the **Phase Balance** setting in the **Transfer Points** menu, was exceeded on Source 1 since this statistic was reset.
- **Total Time S1 Bad:** The total amount of time Source 1 was not acceptable, as defined in the **Transfer Points** menu, since this statistic was reset.
- **Maximum Time S1 Bad:** The longest amount of time Source 1 was not acceptable, as defined in the **Transfer Points** menu, since this statistic was reset.
- **Minimum Time S1 Bad:** The shortest amount of time Source 1 was not acceptable, as defined in the **Transfer Points** menu, since this statistic was reset.
- **Time on Source 1:** The total amount of time Source 1 was selected since this statistic was reset.
- **Time on Source 2:** The total amount of time Source 2 was selected since this statistic was reset.

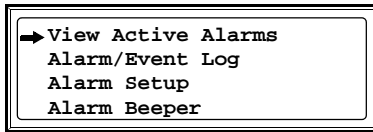
Reset

Reset only the statistic that is shown on the screen by pressing ENTER and following the prompts.

Reset All

Reset all of the statistics by pressing ENTER and following the prompts.

Alarms



View Active Alarms

View a list of all currently existing alarms. When an alarm is present on the system, the **Alarm** LED on the ATS display interface is lit red. Choosing **View Active Alarms** turns off the LED.

Alarm/Event Log

The following items are available on this menu:

- | | |
|---------------------------|--|
| New Logged Items | View only alarms and events logged since New Logged Items was last viewed. The existence of a new alarm causes the Check Log LED on the ATS display interface to light orange. Choosing New Logged Items turns off the LED. |
| Entire Log | View every item in the alarm/event log. When a new alarm is added to the log, the Check Log LED lights orange. Choosing Entire Log turns off the LED. |
| Clear Log | Erase all of the items currently in the alarm/event log. |
| Clr Latched Alarms | Erase only the latched alarms that currently exist in the alarm/event log (see “Clearing latched alarms” on page 44 for more information). |

Alarm Setup

Configure the alarm limits (or thresholds) on this menu:

- | | |
|-----------------------|---|
| Loading Limits | Iout-Alarm Limits: <ul style="list-style-type: none">• Low: If the output current of any phase falls below this value, an alarm condition exists. The value is set as a percentage of the ATS rating, and is shown in amps.• High: If the output current of any phase exceeds this value, an alarm condition exists. The value is set as a percentage of the ATS rating, and is shown in amps.• Neut: If the output neutral current exceeds this value, an alarm condition exists. The value is set as a percentage of the ATS rating, and is shown in amps. |
| Voltage Limits | Vout-Alarm Limits: <ul style="list-style-type: none">• Low: If the output voltage of any phase falls below this value, an alarm condition exists. The value is set as a percentage of the nominal system voltage, and is shown in volts.• High: If the output voltage of any phase exceeds this value, an alarm condition exists. The value is set as a percentage of the nominal system voltage, and is shown in volts. |

Fuel Alarm Limits

Low Fuel Alarms:

- **Percent Fill:** If the amount of fuel as a percentage falls below this value, an alarm condition exists (see “Fuel monitoring/runtime calculation” on page 9 for more information).
- **Runtime:** If the estimated runtime falls below this value, an alarm condition exists (see “Fuel monitoring/runtime calculation” on page 9 for more information).

Other Limits

Other Limits:

- **Frequency:** If the frequency is outside this range, an alarm condition exists.
- **Alarm Delay:** Before an output alarm condition officially exists, the specified limit must be exceeded for this amount of time (in seconds). The advantage of the delay is that it filters out short alarm conditions, which are normal in ATS operation. For example, when utility power is shut off, the ATS will interpret this as a low-voltage condition; however, once the generator begins operation, this alarm is meaningless. An **Alarm Delay** of more than 15 seconds may prevent display of the low-voltage alarm in this example. The **Alarm Delay** applies to all Voltage, Loading, Frequency, and Runtime limits.

Alarm Beeper

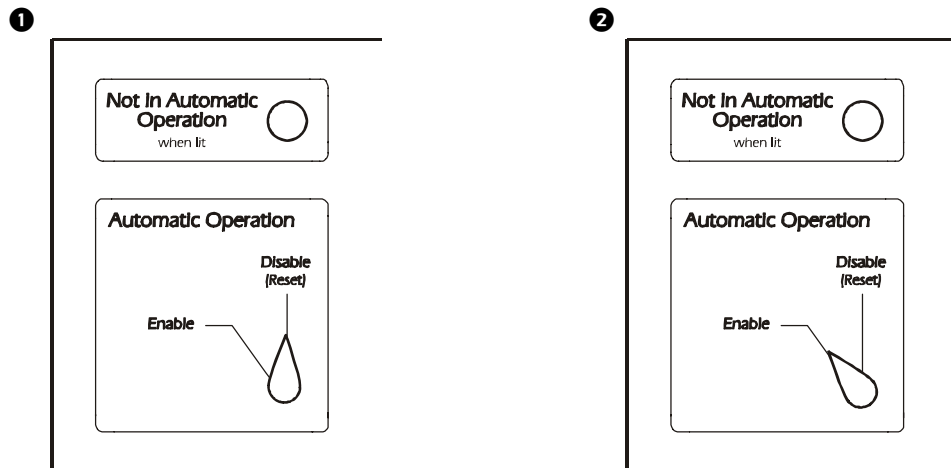
Once the alarm beeper sounds, it will continue to beep every 30 seconds. Touching any button on the ATS display interface will de-activate the beeper. Use this menu option to turn **Off** the beeper so that it never sounds when an alarm occurs, or turn **On** the beeper after you have turned it off. The default is On.

Clearing latched alarms

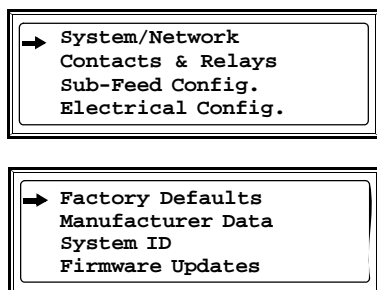
When an alarm is present, the **Alarm** LED on the ATS display interface is lit red. To clear latched alarms, you must acknowledge them differently than other alarms. The following are considered latched alarms:

- **Test Complete-Failed:** The system has failed a self-test.
- **Gen Start Failure:** The generator failed to start.

To clear a latched alarm and turn off the LED, choose the **Clr Latched Alarms** option on the **Alarm/Event Log** menu of the **Alarms** screen. You can also clear latched alarms by resetting automatic operation on the ATS. Set the Automatic Operation switch to **Disable** (1) and then back to **Enable** (2).



Config



System/Network

This menu consists of the following items:

- | | |
|------------------------|--|
| System Password | <ul style="list-style-type: none">• Password: You can change the system password required to access protected screens and fields in the display interface. Enter a string of up to eight alphanumeric characters, and then add the underline character (<u> </u>) to indicate the end of the string. The default password is apc.• Timeout: Set the time the display interface will wait for user input before it reverts to the initial scrolling of status screens. Select 1, 2, 5, 10 (the default), or 30 minutes; or 1, 2, or 4 hours; or forever.• Invalidate NOW: Allows you to re-enter your system password for viewing password-protected screens. |
| Date/Time | <ul style="list-style-type: none">• Date: Set using the following format: dd-mmm yyyy.• Time: Set using the following format: hh:mm:ss |
| Local Interface | <ul style="list-style-type: none">• Contrast: Set the screen contrast for the LCD. Select from 1 (high contrast) to 8 (low contrast).• Key Click: Choose On for an audible click whenever you press a navigation button. Choose Off to disable the click.• Beeper Volume: Select High, Medium, Low, or Off to adjust the loudness of both the audible beeper and the click.• Metric Units: Choose On to view all data as metric values (e.g., meters) and Off to view data as U.S. standard units (e.g., feet). |
| Network Config | <ul style="list-style-type: none">• IP: The system IP address.• SM: The subnet mask, which identifies the subnetwork on which the ATS operates.• GW: The default gateway used by the ATS. The MAC address is displayed in brackets at the bottom of the screen. |

Contacts & Relays

The ATS can monitor external contact closure events. Possible applications include:

- Magnetic contact switches
- Window foil
- Tamper switches
- Heat detectors
- Water sensors
- Pressure sensors
- Building smoke and fire detection systems

You can set input contacts to cause alarm conditions based on their current state in relation to a user-defined normal state. Relay outputs can map internal alarms and events to outside devices. Use the **Contacts & Relays** screen to display and configure information about input contacts and relay outputs.

Input Contacts

Scroll through the list to display information about each of the installed contact inputs. For example, **02of04** displays information about the second of four installed input contacts.

- **Name:** The name of this input contact (maximum of 14 alphanumeric characters).
- **Normal:** The normal position of this input contact, either **Open** or **Closed**.
- **Status:** The actual position of this input contact. If the actual position is not the normal position, an alarm condition occurs.

Relay Outputs

Scroll through the list to display information about each of the installed relay outputs. For example, **04of04** displays information about the fourth of the four available relay outputs.

- **Name:** The name of this relay output (maximum of 14 alphanumeric characters).
- **Normal:** The normal position of this relay output, either **Open** or **Closed**.
- **Status:** The actual position of this relay output.

Output Relay Map

Configure the relay outputs using the **Output Relay Map**. Each **Relay Map** corresponds to a relay output. For example, **Relay Map 01of04** corresponds to the first of four relay outputs. The second line, in brackets [], lists the items you have selected to map to the selected relay. The third line allows you to select the alarms to which you want to map the relay:

- A! Any Alarm
- V1 Source 1 Quality Bad[†]
- V2 Source 2 Quality Bad[†]
- Vo Output Voltage Alarm[†]
- R Run/Start Contact ON
- S2 Source 2 Selected
- F Fuel/Runtime Alarm
- L Any Load Alarm
- Au ATS Not-in-Auto Mode
- S! The Source 1 and Source 2 switches are ON (closed)
- C1 Contact 1[‡]
- C2 Contact 2[‡]
- C3 Contact 3[‡]
- C4 Contact 4[‡]

[†] If you map all three of the voltage alarms (V1, V2, Vo), the map will display the following: V12o

[‡] If you map all four of the contact alarms (C1, C2, C3, C4), the map will display the following: C1234

Electrical Config

The following items are available on this menu:

Voltage	Specifies the input voltage rating of the ATS.
Switch Rating	Specifies the amperage rating of the ATS.
Frequency	Specifies the frequency rating of the ATS.
DC Backup	Specifies whether or not the ATS monitoring unit is receiving back-up power from the generator battery.

Factory Defaults

Use this option on the **Config** screen to reset all ATS settings to their factory default values.

Manufacturer Data

Use this option on the **Config** screen to display a scrollable list containing information about the ATS. This information is useful when requesting service or product updates. The following information is displayed:

- Manufacturer Name
- Date of Manufacture
- Date of Calibration
- Hardware Revision
- Firmware Revision
- Serial Number
- Model Number

System ID

The following items are available on this menu:

System Name	Set a unique name for your InfraStruXure Power Generation System.
Location	Specify the physical location of the system in relation to your data center.
Contact	Identify the person to notify concerning questions or problems with regard to the system.

Firmware Updates

Use this option on the **Config** screen to download updated firmware to the ATS.

Reset 100% Fuel Level

Use this option after the generator's tank has been filled to reset the ATS to acknowledge a 100-percent fuel level. The ATS can now begin calculating accurate fuel-consumption rates and run-time information.

Communication Configuration

ATS Management Options

Overview

There are two options for managing your system. You can manage the ATS, along with the rest of your InfraStruXure equipment, through the InfraStruXure Manager (APC LAN); or you can manage your system through APC's network management interfaces (User LAN).

InfraStruXure Manager

The InfraStruXure Manager is a rack-mount management device that coordinates the management functions of APC InfraStruXure-Certified devices installed in your data center. It provides a single interface to view and configure all APC InfraStruXure-Certified devices (see "Configuring the InfraStruXure Manager" on page 50 for configuration instructions).



See also

For more information about the InfraStruXure Manager, refer to the *Installation and Configuration Manual* included with the InfraStruXure Manager.

Network management interfaces

The control console and Web interfaces provide menus with options for managing your system (see "Configuring the ATS Network Management Interface" on page 51 for configuration instructions).



See also

For more information about the internal user interfaces, refer to the InfraStruXure Power Generation System's on-line *Network Management User's Guide*.

The SNMP interface allows you to use an SNMP browser with the PowerNet[®] Management Information Base (MIB) to manage your system (see "Configuring the ATS Network Management Interface" on page 51 for configuration instructions).



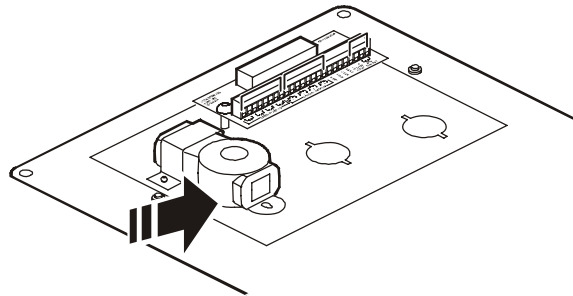
See also

To use the PowerNet MIB with an SNMP browser, refer to the *PowerNet[®] SNMP Management Information Base (MIB) Reference Guide*, which is provided on the InfraStruXure Power Generation System's Utility CD.

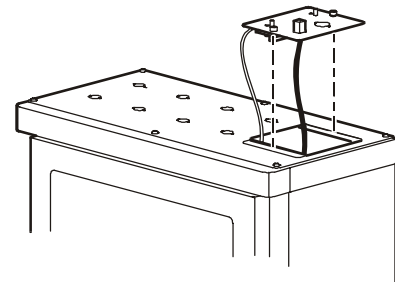
Configuring the InfraStruXure Manager

Connect the ATS to the InfraStruXure Manager

1. Connect a CAT-5 network cable to the surge-protected ethernet port on the user connection plate. The arrow in the illustration below is pointing to the port. The figure on page 11 shows the location of the user connection plate on the roof of the ATS.



You can make this connection from inside the enclosure, or you can remove the user connection plate from the ATS to make the connection. A Phillips or standard screwdriver is needed to loosen the two captive screws. Use the knockout in this plate to route the cable. If you decide to remove the plate, make sure not to disturb the existing connections.



2. Run the connected CAT-5 network cable through the knockout in the user connection plate to the InfraStruXure Manager Hub.
3. Configure the InfraStruXure Manager only after all APC InfraStruXure-Certified equipment has been installed, the network cable has been connected to the InfraStruXure Manager Hub, and start-up of the system has been completed.



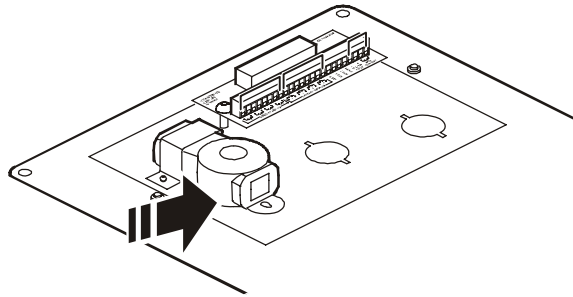
See also

For detailed configuration instructions, refer to the *Installation and Quick-Start Manual* included with your InfraStruXure Manager.

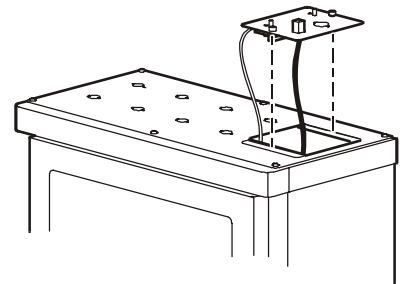
Configuring the ATS Network Management Interface

Connect the ATS to your network

1. Connect a CAT-5 network cable to the surge-protected ethernet port on the user connection plate. The arrow in the illustration below is pointing to the port. The figure on page 11 shows the location of the user connection plate on the roof of the ATS.



You can make this connection from inside the enclosure, or you can remove the user connection plate from the ATS to make the connection. A Phillips or standard screwdriver is needed to loosen the two captive screws. Use the knockout in this plate to route the cable. If you decide to remove the plate, make sure not to disturb the existing connections.



2. Run the connected CAT-5 network cable through the knockout in the user connection plate to your network connection.
3. Configure the TCP/IP settings of the ATS (see “Configuration overview” on page 52 for further instructions).

Configuration overview

You must configure the following TCP/IP settings before the ATS can operate on a network:

- IP address of the ATS (only needed for manual address assignment)
- Subnet mask
- Default gateway



Note

If a default gateway is unavailable, use the IP address of a usually running computer that is located on the same subnet as the ATS. The ATS will use the default gateway to test the network at times when traffic is very light. Refer to “Watchdog Features” in the “Introduction” of the InfraStruXure Power Generation System’s on-line *Network Management User’s Guide* for more information about the watchdog role of the default gateway.

TCP/IP configuration methods

Use one of the following methods to define the TCP/IP settings needed by the ATS:

- Device IP Configuration Wizard (see “Device IP Configuration Wizard” on this page).
- BOOTP or DHCP server (see “BOOTP & DHCP configuration” on page 53).
- Local computer (see “Local access to the control console” on page 55).
- Networked computer (see “Remote access to the control console” on page 55).

Device IP Configuration Wizard

You can use the Device IP Configuration Wizard on a Windows NT®, Windows 2000, or Windows XP computer to discover unconfigured ATS systems and configure their basic TCP/IP settings.



See also

To configure one or more ATSs by exporting configuration settings from a configured ATS, refer to “How to Export Configuration Settings” in the on-line *Network Management User’s Guide* on the Utility CD.

1. Insert the InfraStruXure Power Generation System’s Utility CD into a computer on your network.
2. Launch the Wizard, when prompted. If prompted to restart the computer, access the Wizard from the **Start** menu after the computer has restarted.
3. Wait for the Wizard to discover the first unconfigured ATS, then follow the on-screen instructions.



Note

If the **Start a Web browser when finished** option is enabled, you can use **apc** for both the **User Name** and the **Password** to access the ATS through your browser.

BOOTP & DHCP configuration

The **Boot Mode** setting, a TCP/IP option in the ATS's **Network** menu, identifies how the TCP/IP settings will be defined. The possible settings are **Manual**, **DHCP only**, **BOOTP only**, and **DHCP & BOOTP** (the default setting).



Note

The **DHCP & BOOTP** setting assumes that a properly configured DHCP or BOOTP server is available to provide TCP/IP settings to ATSS. If these servers are unavailable, see “Device IP Configuration Wizard” on page 52, “Local access to the control console” on page 55, or “Remote access to the control console” on page 55 to configure the needed TCP/IP settings.

With **Boot Mode** set to DHCP & BOOTP, the ATS attempts to discover a properly configured server. It first searches for a BOOTP server, and then a DHCP server, and repeats this pattern until it discovers a BOOTP or DHCP server.



Note

For more information, see “BOOTP” on this page or “DHCP” on page 54.

BOOTP: Use an RFC951-compliant BOOTP server to configure the TCP/IP settings for the ATS.



Note

The BOOTP setting assumes that a properly configured BOOTP server is available to provide TCP/IP settings to ATSS. If a BOOTP server is unavailable, see “Device IP Configuration Wizard” on page 52, “Local access to the control console” on page 55, or “Remote access to the control console” on page 55 to configure the TCP/IP settings.

1. Make sure the **BOOTP** setting, a **TCP/IP** option in the ATS's **Network** menu, is enabled.
2. Enter the ATS's MAC and IP addresses, the subnet mask and default gateway settings, and an optional Bootup file name in the BOOTPTAB file of the BOOTP server.



See also

For the MAC address, look on the Quality Assurance slip included with the ATS.

3. When the ATS reboots, the BOOTP server provides it with the TCP/IP settings.
 - If you specified a bootup file name, the ATS attempts to transfer that file from the BOOTP server using TFTP or FTP. The ATS assumes all settings specified in the bootup file.
 - If you did not specify a bootup file name, the ATS can be configured remotely by using Telnet or the Web interface: **User Name** and **Password** are both **apc**, by default.



See also

To create the bootup file, refer to your BOOTP server documentation.

DHCP. Use an RFC2131/RFC2132-compliant DHCP server to configure the TCP/IP settings for the ATS.



See also

This section summarizes ATS communication with a DHCP server. For more detailed information about how a DHCP server is used to configure network settings for an ATS, refer to “DHCP Configuration” in the InfraStruXure Power Generation System’s on-line *Network Management User’s Guide*.

1. The ATS sends out a DHCP request with the following identifiers:
 - A Vendor Class Identifier (APC, by default)
 - A Client Identifier (the ATS’s MAC address value, by default)
 - A User Class Identifier (identification of the ATS’s application firmware, by default)
2. A properly configured DHCP server responds with a DHCP offer that includes all of the settings the ATS needs for network communication. The DHCP offer also includes the **Vendor Specific Information** option (DHCP option 43). By default, the ATS will ignore DHCP offers that do not encapsulate the APC cookie in the Vendor Specific Information option using the following hexadecimal format:

Option 43 = 01 04 31 41 50 43

where

- the first byte (01) is the code
- the second byte (04) is the length
- the remaining bytes (31 41 50 43) are the APC cookies



Refer to your DHCP server documentation to add code to the Vendor Specific Information option. To disable the APC cookie requirement, see “Local access to the control console” on page 55.



To change the control console’s **DHCP Cookie Is** setting, use the **Advanced** option in the TCP/IP menu (see “Remote access to the control console” on page 55).

Local access to the control console

Use a local computer that connects to the ATS through the console port on the ATS monitoring unit to access the control console. If accessing the ATS on the local control console, you will not receive any information about the generator.

1. Select a serial port on your local computer, and disable any service using that port.
2. Connect the configuration cable (APC part # 940-0103) to the selected port on the computer and to the console port on the ATS monitoring unit.
3. Run a terminal program (such as HyperTerminal®) on your computer and configure the port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control. Save the changes.
4. Press ENTER to display the **User Name** prompt.
5. Use **apc** for both the **User Name** and the **Password**.
6. See “Control console” on page 56 to finish the configuration.

Remote access to the control console

From any computer on the same subnet as the ATS, you can use ARP and Ping to assign the ATS an IP address, and then Telnet to access that ATS’s control console for configuring its TCP/IP settings.



Note

After an ATS has its IP address configured, you can use Telnet, without first using ARP and Ping, to access that ATS.

1. Use ARP to define an IP address for the ATS, and use the ATS’s MAC address in the ARP command. For example, to define an IP address of 156.205.14.141 for an ATS that has a MAC address of 00 c0 b7 63 9f 67, use one of the following commands:

– Windows command format:

```
arp -s 156.205.14.141 00-c0-b7-63-9f-67
```

– LINUX command format:

```
arp -s 156.205.14.141 00:c0:b7:63:9f:67
```



See also

For the MAC address, look on the Quality Assurance slip included with the ATS.

2. Use Ping with a size of 113 bytes to assign the IP address defined by the ARP command. For the IP address defined in step 1, use one of the following Ping commands:

- Windows command format:

```
ping 156.205.14.141 -l 113
```

- LINUX command format:

```
ping 156.205.14.141 -s 113
```

3. Use Telnet to access the ATS at its newly assigned IP address. For example:

```
telnet 156.205.14.141
```

4. Use **apc** for both the **User Name** and the **Password**.
5. See “Control console” on this page to finish the configuration.

Control console

After logging on at the control console, as described in “Local access to the control console” on page 55 or “Remote access to the control console” on page 55, proceed as follows:

1. Choose **Network** from the **Control Console** menu.
2. Choose **TCP/IP** from the **Network** menu.
3. If you are not using a **BOOTP** or **DHCP** server to configure the **TCP/IP** settings, select the **Boot Mode** menu. Select **Manual boot mode**, and then press ESC to return to the **TCP/IP** menu (changes will take effect when you log out).
4. Set the **System IP**, **Subnet Mask**, and **Default Gateway** address values.
5. Press CTRL-C to exit to the **Control Console** menu.
6. Log out (option 4 in the **Control Console** menu).



Note

If you disconnected a cable during the procedure described in “Local access to the control console” on page 55, reconnect that cable and restart the associated service.

How to Access the ATS Network Management Interface



Note

Use the procedures in this section to access the ATS from the public LAN. If you want to access the ATS through the APC LAN, refer to the InfraStruXure Manager's *Installation and Quick-Start Manual*.

Web interface

You can use Microsoft® Internet Explorer 5.0 (and higher) or Netscape® 4.0.8 (and higher, except Netscape 6.x) as your browser to access the ATS through its Web interface. Other commonly available browsers may also work, though they have not been fully tested by APC.

When utilizing the Web browser to configure ATS options or to view the event log, use either of the following:

- The HTTP protocol (enabled by default), which provides authentication by user name and password (but with no encryption).
- The more secure HTTPS protocol, which provides extra security through Secure Socket Layer (SSL) to encrypt user names, passwords, and data being transmitted. It also provides authentication of Network Management Cards by means of digital certificates.

To access the Web interface and configure the security of your device on the network:

1. Identify the ATS by its IP address or DNS name (if configured).
2. Enter the user name and password (the defaults are **apc** and **apc** for an Administrator, and **device** and **apc** for a Device Manager).
3. Select and configure the type of security you want (this option is available only for Administrators).



See also

Refer to “Security” in the InfraStruXure Power Generation System’s on-line *Network Management User’s Guide* for information about choosing and setting up your network security. Use the **Web/SSL** option of the **Network** menu to enable or disable the HTTP or HTTPS protocols.

Telnet and SSH

You can access the control console through Telnet or Secure SHell (SSH), depending on which is enabled (an Administrator can enable these access methods through the **Telnet/SSH** option of the **Network** menu). By default, Telnet is enabled. Enabling SSH automatically disables Telnet.

Telnet for basic access. Telnet provides the basic security of authentication by user name and password, but not the high-security benefits of encryption. To use Telnet to access an ATS's control console from any computer on the same subnet:

1. At a command prompt, use the following command line, and then press ENTER:

```
telnet address
```

For *address*, use the ATS's IP address or DNS name (if configured).

2. Enter the user name and password (the defaults are **apc** and **apc** for an Administrator, and **device** and **apc** for a Device Manager).

SSH for high-security access. If choosing the high security of SSL for the Web interface, use Secure SHell (SSH) to access the control console. SSH encrypts user names, passwords, and transmitted data.

The interface, user accounts, and user access rights are the same when accessing the control console through either SSH or Telnet. In order to use SSH, you must have an SSH client program installed on your computer and SSH must be properly configured.



See also

Refer to the InfraStruXure Power Generation System's on-line *Network Management User's Guide* for more information about configuring and using SSH.

SNMP

After adding the PowerNet MIB to a standard SNMP MIB browser, you can use that browser for SNMP access to the ATS. The default read community name is **public**; the default read/write community name is **private**.



Note

If you enable SSL and SSH for their high-security authentication and encryption, disable SNMP. Allowing SNMP access to the ATS compromises the high security implemented by choosing SSL and SSH. To disable SNMP, you must be an Administrator; use the **SNMP** option from the **Network** menu.

FTP and SCP

You can use FTP (enabled by default) or Secure CoPy (SCP) to transfer new firmware to the ATS, or to access a copy of the ATS's event logs. SCP provides the higher security of encrypted data transmission and is enabled automatically when you enable SSH.



Note

If you enable SSL and SSH for their high-security authentication and encryption, disable FTP. Allowing file transfer to the ATS through FTP compromises the high security implemented by choosing SSL and SSH. To disable FTP, you must be an Administrator; use the **FTP Server** option from the **Network** menu.

To access the ATS through FTP or SCP, the default user name and password are **apc** and **apc** for an Administrator, and **device** and **apc** for a Device Manager. In the command line, use the IP address of the unit.



See also

Refer to the InfraStruXure Power Generation System's on-line *Network Management User's Guide* to use FTP or SCP to retrieve log files from the ATS or to transfer firmware files to the ATS.

How to Recover From a Lost Network Management Interface Password



Note

Disregard the procedure in this section if the APC InfraStruXure Manager is included with your system. Refer to the InfraStruXure Manager's *Installation and Quick-Start Manual* for information about recovering from a lost password.

1. Select a serial port on your local computer, and disable any service using that port.
2. Connect the configuration cable (APC part # 940-0103) to the selected port on the computer and to the console port on the ATS monitoring unit.
3. Run a terminal program (such as HyperTerminal®) on your computer and configure the port as follows:
 - 9600 bps
 - 8 data bits
 - no parity
 - 1 stop bit
 - no flow control
4. Press ENTER, repeatedly if necessary, to display the **User Name** prompt. If you are unable to display the **User Name** prompt, verify the following:
 - The serial port is not in use by another application.
 - The terminal settings are correct as specified in step 3.
 - The correct cable is being used as specified in step 2.
5. Press the **Reset** button on the ATS monitoring unit. The **Status** LED will flash alternately orange and green. Press the **Reset** button on the ATS monitoring unit again while the LED is flashing to temporarily reset the user name and password to their defaults.
6. Press ENTER as many times as necessary to redisplay the **User Name** prompt, then use the default **apc** for the user name and the password (if you take longer than 30 seconds to log on after the **User Name** prompt is redisplayed, you must repeat step 5 and log on again).
7. From the **Control Console** menu, select **System**, then **User Manager**.
8. Select **Administrator** and then change the **User Name** and **Password** settings, both of which are now defined as **apc**.
9. Press CTRL-C and log off before reconnecting any cable you may have disconnected, and before restarting any service you may have disabled.

Customizing and Updating the ATS

How to Connect User Input Contacts and Relay Outputs to the ATS

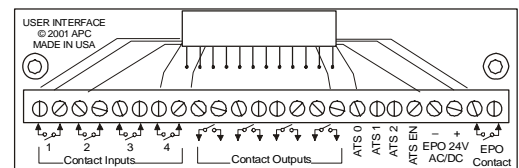
Overview

The ATS can monitor external contact closure events. Possible applications include:

- Magnetic contact switches
- Window foil
- Tamper switches
- Heat detectors
- Water sensors
- Pressure sensors
- Building smoke and fire detection systems

You can set input contacts to cause alarm conditions based on their current state in relation to a user-defined normal state. Relay outputs can map internal alarms and events to outside devices (see “Contacts & Relays” on page 46 for information about setting up alarms).

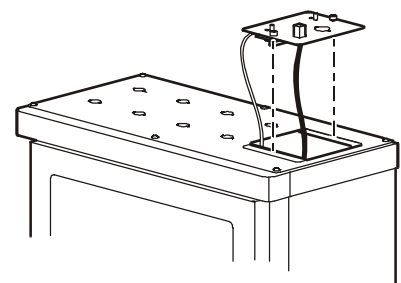
Make contact closure connections (NO or NC) at the user interface circuit board located on the user connection plate. You can make eight connections—four input contacts and four relay outputs. The user connection plate is on the roof of the ATS enclosure.



Note

The terminal block on the user interface board accepts wire sizes from 12 to 30 AWG or 2.5 to 0.2 mm².

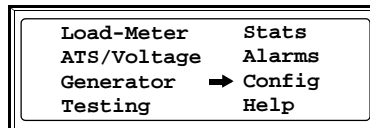
You can make these connections from inside the enclosure, or you can remove the user connection plate from the ATS to make the connections. A Phillips or standard screwdriver is needed to loosen the two captive screws. Use the knockout in this plate to route cables to the user interface board. If you decide to remove the plate, make sure not to disturb the existing connections.



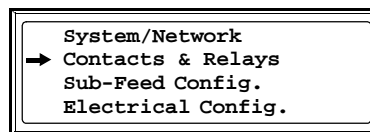
How to connect contacts to the user interface board

To connect and monitor your contacts:

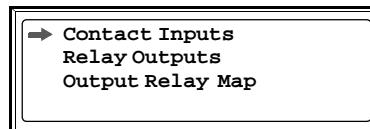
1. Choose one or more terminals on the user interface board for connecting contacts. The user interface board is connected to the **User/EPO port** on the ATS monitoring unit.
2. From the ATS display interface:
 - a. Press ESC or ENTER to go to the top-level menu screen.
 - b. Select **Config** from the top-level menu screen and press ENTER.



- c. Select **Contacts & Relays** from the Config menu screen and press ENTER.

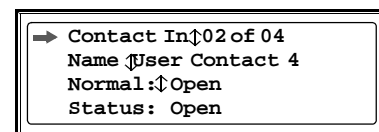


- d. Select the type of contact you are connecting: **Contact Inputs** or **Relay Outputs**.



You will be prompted for your password to configure these items.

- e. Press the Up or Down arrow to select the appropriate contact number and press ENTER.
 - f. Press the Down arrow to enter a unique **Name** for the contact and to configure the **Normal** state of the contact (**Open** or **Closed**). The default **Normal** state is **Open**. Press ENTER to select the item you wish to configure.



- g. Connect contact wires (300 V-rated cabling required) to the terminal block on the user interface board. You will need a 2.5-mm standard screwdriver.
 - h. Run the wires out the roof of the ATS to your contact's location.



Ensure the wires are properly retained and kept away from high-voltage wires and breakers.

How to Connect an EPO Switch to the ATS



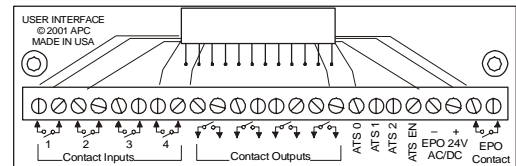
If you do not connect an EPO switch to the ATS, be sure to set the **Arm/Test** rocker on the ATS monitoring unit to **Test**.

Note

Overview

Connecting the switch. The Emergency Power Off (EPO) switch connects to the user interface board on the user connection plate. The user connection plate is located on the roof of the ATS. Connect an EPO switch to the user interface board (shown at right) using one of the following connections:

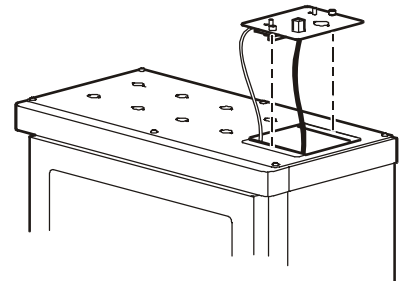
- Contact closure (**Recommended!**)
- 24 VAC
- 24 VDC



The terminal block on the user interface board accepts wire sizes from 12 to 30 AWG or 2.5 to 0.2 mm².

Note

You can make this connection from inside the enclosure, or you can remove the user connection plate from the ATS to make the connection. A Phillips or standard screwdriver is needed to loosen the two captive screws. Use the knockout in this plate to route cables to the user interface board. If you decide to remove the plate, make sure not to disturb the existing connections.

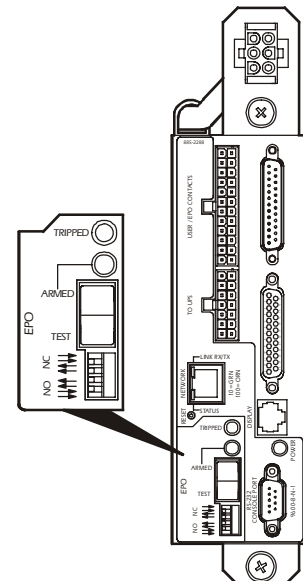


Configuring and testing. The configuring and testing of the switch is performed through the EPO interface on the ATS monitoring unit. The figure on the right shows the monitoring unit and the location of the EPO LEDs and DIP switches.



APC offers an optional InfraStruXure EPO System (EPW9). Contact your APC sales representative, or visit the APC Web site (www.apc.com) for more information.

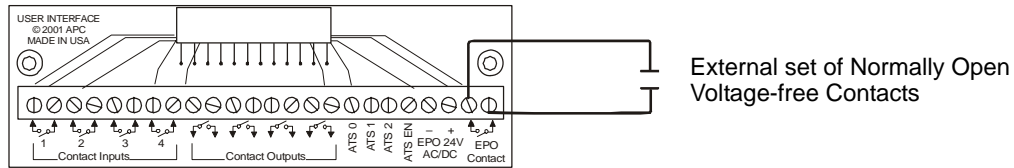
Note



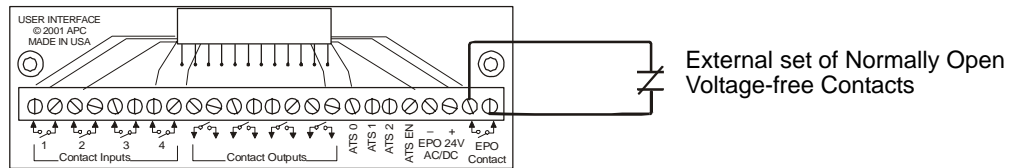
Connect an EPO switch to the user interface board and test the switch

1. Connect the switch to the EPO connection terminals on the user interface board. Read the label next to the terminal block to determine which terminals correspond to your signal type:

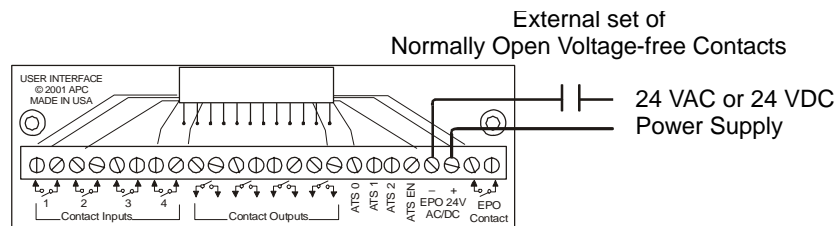
– Contact Closure—Normally Open



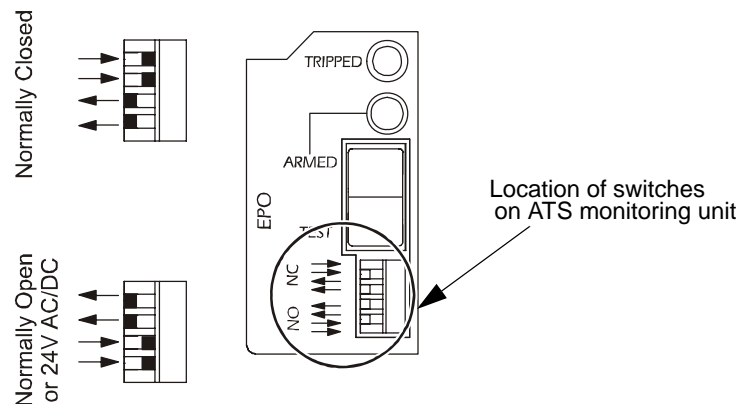
– Contact Closure—Normally Closed



– 24VAC/VDC—Normally Open

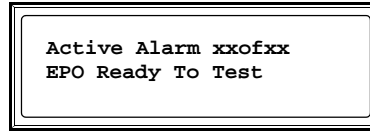


2. Verify that the EPO DIP switches on the ATS monitoring unit are configured properly for your signal type. The labels above the switches and the figure below show the correct settings for both the Normally Open (NO) and Normally Closed (NC) configurations.



3. Test the EPO switch to ensure it is wired properly and working correctly:

- a. Place the **Arm/Test** rocker switch on the ATS monitoring unit in the **Test** position. The EPO state LEDs should be off and the ATS display interface should show the following alarm (in addition to any other active alarms):



- b. Engage the EPO switch (if your switch is momentary, engage while one person is watching the EPO state LEDs and another is at the EPO switch).
- c. Observe the EPO LEDs. If the switch is wired properly and working correctly, both of the EPO state LEDs should light red when the switch is engaged.
- d. If the test was successful, return the **Arm/Test** rocker switch to the **Arm** position. The ATS display interface will clear the EPO test mode alarm. If the test was not successful, refer to the following troubleshooting chart:

Problem	Action
Neither state LED was lit red when the EPO switch was engaged.	<ul style="list-style-type: none"> • Check the wiring to your EPO switch. • Check to make sure the EPO DIP switch configuration is correct for your switch (NO or NC). See step 2 on the previous page for proper configuration instructions.
Only one of the state LEDs was lit red when the EPO switch was engaged.	<ul style="list-style-type: none"> • Check to make sure the EPO DIP switch configuration is correct for your switch (NO or NC) and retest. See step 2 on the previous page for proper configuration instructions. • If the switch is configured correctly and both LEDs did not light red after retesting, contact APC customer support (see the back cover of this manual).

- e. Repeat this test for each EPO switch installed.
4. After testing is completed, ensure the **Arm/Test** rocker switch is in the **Arm** position on the ATS monitoring unit.

Safety warnings

Hazardous voltage from the branch circuit must be isolated from the 24 VAC, 24 VDC, and contact closure terminals. 24 VAC and 24 VDC are considered Class 2 circuits as defined in Article 725 of the National Electrical Code (NFPA 70) and Section 16 of the Canadian Electrical Code (C22.1).

A Class 2 circuit is a source having limited voltage and energy capacity:

- a. If an Inherently Limited Power Source, then voltage and energy are limited to less than 30 VAC, 30 VDC, and 8 A.
- b. If not an Inherently Limited Power Source, then voltage and energy are limited to less than 30 VAC, 60 VDC, and 250 VA, while current is limited to 1000/V max. The fuse is limited to 5 A if less than 20 VAC or 20 VDC; or 100/V maximum if less than 30 VAC or 60 VDC.

If using a 24 VAC, 24 VDC, or contact closure connection to the EPO, include one of the following UL-listed wire types:

- CL2 Class 2 cable for general purpose use
- CL2P Plenum cable for use in ducts, plenums, and other environmental air space
- CL2R Riser cable for use in a vertical-run shaft from floor to floor
- CL2X Limited Use cable for usage in dwellings or in a raceway
- For installations in Canada, the cable should be CSA Certified, type ELC (extra-low-voltage control cable).

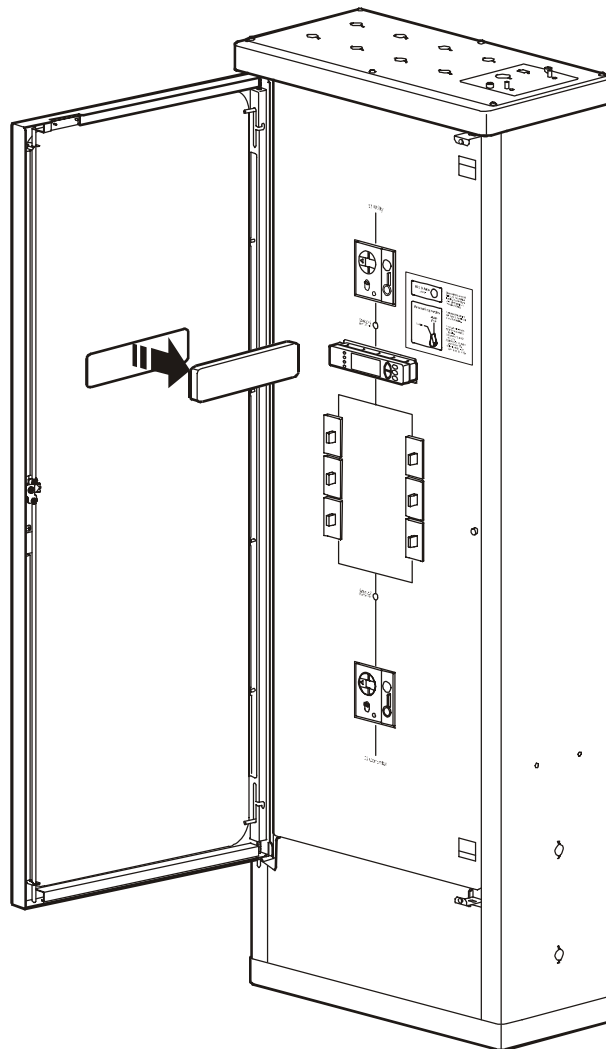
If not using a CL2 cable, route the EPO wiring in conduit that does not contain any branch circuit wiring.

How to Allow Easy Access to the ATS Display Interface

The ATS comes with a Plexiglas cover plate that can be installed in the front door to protect against access to the display interface. When installed, access to the interface requires opening the front door.

To attach the cover plate, peel off the paper strips on the top and bottom of the plate to expose the adhesive. Press the plate into place from inside the door.

To remove the cover plate and gain ready access to the display interface, open the front door and press firmly on the plate from outside the door as shown below. You may need to use a screwdriver or other flat tool to pry the plate away from the inside of the door.



How to Add Sub-Feed Output Distribution Circuit Breakers to the ATS



The ATS panel bus must be completely de-energized before adding breakers!

Output distribution circuit breakers available from APC

Part Number	Description	Height on Panel
PG1P15AT1B	15 A, single-pole breaker, T1 frame	1.00 in/25.4 mm
PG1P20AT1B	20 A, single-pole breaker, T1 frame	1.00 in/25.4 mm
PG1P25AT1B	25 A, single-pole breaker, T1 frame	1.00 in/25.4 mm
PG1P30AT1B	30 A, single-pole breaker, T1 frame	1.00 in/25.4 mm
PG3P15AT1B	15 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P20AT1B	20 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P25AT1B	25 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P30AT1B	30 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P40AT1B	40 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P50AT1B	50 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P60AT1B	60 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P70AT1B	70 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P80AT1B	80 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P90AT1B	90 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P100AT1B	100 A, three-pole breaker, T1 frame	3.00 in/76.2 mm
PG3P125AT3B	125 A, three-pole breaker, T3 frame	4.13 in/104.9 mm
PG3P150AT3B	150 A, three-pole breaker, T3 frame	4.13 in/104.9 mm
PG3P175AT3B	175 A, three-pole breaker, T3 frame	4.13 in/104.9 mm
PG3P200AT3B	200 A, three-pole breaker, T3 frame	4.13 in/104.9 mm
PG3P225AT3B	225 A, three-pole breaker, T3 frame	4.13 in/104.9 mm



Circuit breaker adapter modules are required when mounting breakers onto the panel bus in the ATS. Refer to “Circuit breaker adapter modules available from APC” on page 69.

Circuit breaker adapter modules available from APC

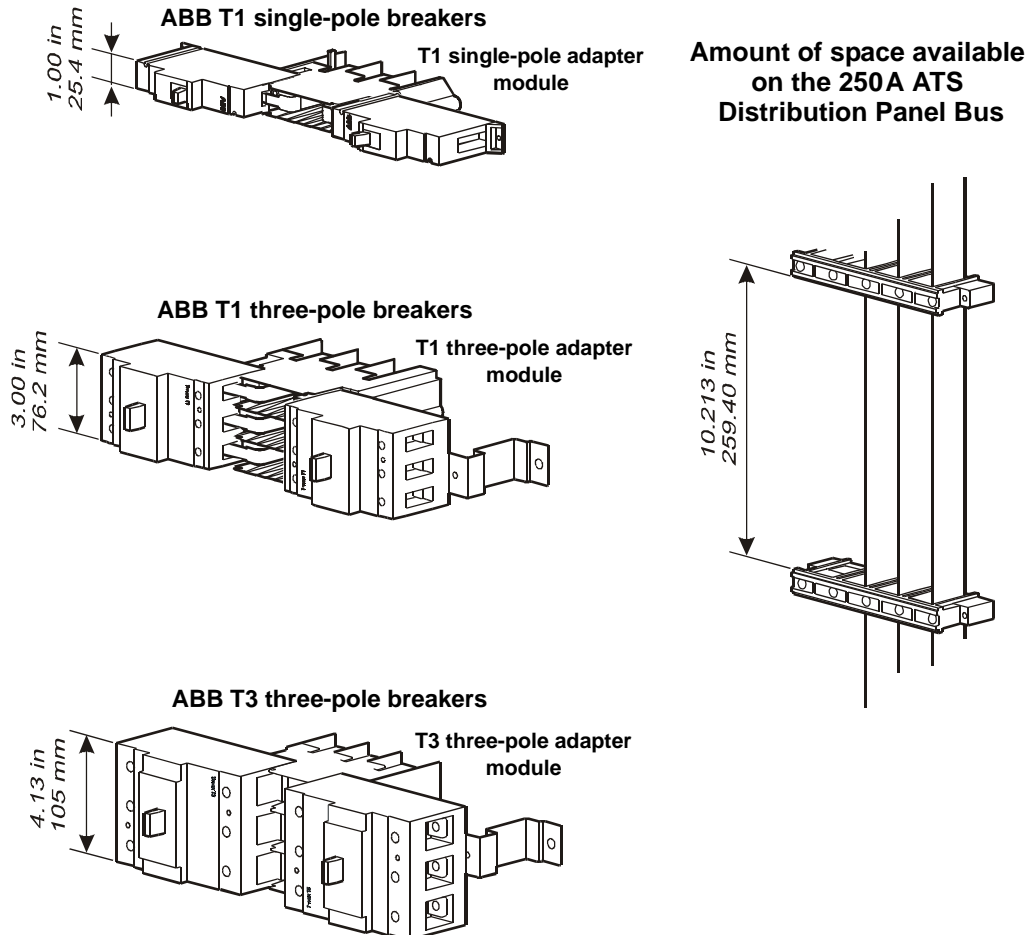
Adapter modules are required when mounting breakers onto the panel bus in the ATS. Each adapter module can accommodate two breakers.

APC's adapter modules are sized to fit all of the circuit breaker types described on the previous page: T1 single-pole breakers, T1 three-pole breakers, and T3 three-pole breakers. Two types of T1 single-pole adapters are offered: one that plugs into either L1 or L3, and one that plugs into L2. When adding single-pole breakers, try to keep the loads balanced among L1, L2, and L3.

PGT11PADAP	T1 single-pole adapter module for plugging into L1 or L3
PGT1L21PADAP	T1 single-pole adapter module for plugging into L2
PGT13PADAP	T1 three-pole adapter module
PGT33PADAP	T3 three-pole adapter module

Determine the configuration of the panel

Before installing circuit breakers on the ATS panel bus, be sure enough space is available on the bus. Use the information below and in the next section to determine configurations.



Allowed circuit breaker combinations

The panel bus on your ATS allows a variety of circuit breaker combinations. Use the following information as a guide in determining your circuit breaker combination.

Combination #1.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	2	4	8.26 in (209.8 mm)	1.94 in (49.6 mm)
T1 3-pole	0	0	0	1.94 in (49.6 mm)
T1 1-pole	1	2	1.00 in (25.4 mm)	0.94 in (24.2 mm)

Combination #2.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	1	2	4.12 in (104.9 mm)	6.08 in (154.5 mm)
T1 3-pole	2	4	6.00 in (152.4 mm)	0.08 in (2.1 mm)
T1 1-pole	0	0	0	0.08 in (2.1 mm)

Combination #3.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	3	6	9.00 in (228.6 mm)	1.2 in (30.8 mm)
T1 1-pole	1	2	1.00 in (25.4 mm)	0.2 in (5.4 mm)

Combination #4.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	3	6	9.00 in (228.6 mm)	1.2 in (30.8 mm)
T1 1-pole	0	0	0	1.2 in (30.8 mm)

Combination #5.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	2	4	6.00 in (152.4 mm)	4.2 in (107.0 mm)
T1 1-pole	4	8	4.00 in (101.6 mm)	0.2 in (5.4 mm)

Combination #6.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	1	2	3.00 in (76.2 mm)	7.2 in (183.2 mm)
T1 1-pole	6	12	6.00 in (152.4 mm)	1.2 in (30.8 mm)

Combination #7.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	1	2	3.00 in (76.2 mm)	7.2 in (183.2 mm)
T1 1-pole	7	14	7.00 in (177.8 mm)	0.2 in (5.4 mm)

Combination #8.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	0	0	0	10.2 in (259.4 mm)
T1 1-pole	8	16	8.00 in (203.2 mm)	2.2 in (26.2 mm)

Combination #9.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	0	0	0	10.2 in (259.4 mm)
T1 1-pole	9	18	9.00 in (228.6 mm)	1.2 in (30.8 mm)

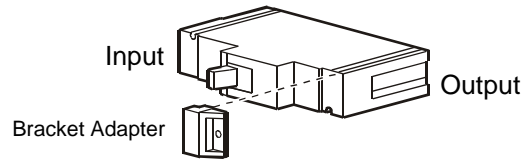
Combination #10.

Type of Breaker	# of Modules	# of Breakers	Space Occupied	Space Remaining
T3 3-pole	0	0	0	10.2 in (259.4 mm)
T1 3-pole	0	0	0	10.2 in (259.4 mm)
T1 1-pole	10	20	10.00 in (254.0 mm)	0.2 in (5.4 mm)

Preparing the breakers for installation

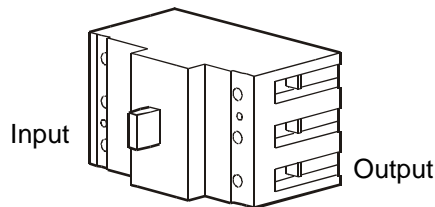
Certain breakers require preparation before installation onto their adapter module. Preparation procedures are described below. The identified parts are included with your circuit breaker kit.

ABB T1 single-pole breaker



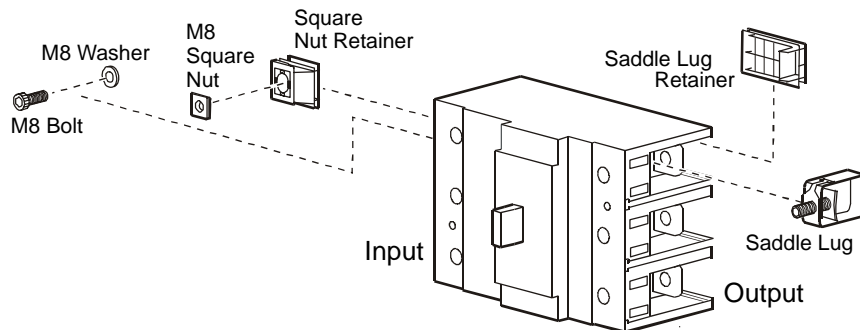
Slide the bracket adapter onto the output side of the T1 single-pole breaker. The bracket adapter is used to attach the breaker to its adapter module.

ABB T1 three-pole breaker



The T1 three-pole breaker requires no additional preparation.

ABB T3 three-pole breaker



The input and output sides of the T3 three-pole breaker require preparation:

On the input side, follow these steps for each of the three pole positions:

1. Place an M8 square nut into a square nut retainer, then insert the retainer into the pole position.
2. Slide an M8 washer onto an M8 bolt, then insert the bolt into the pole position by loosely attaching it to the M8 square nut that was installed in the previous step.

On the output side, follow these steps for each of the three pole positions:

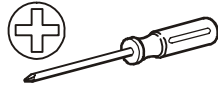
1. Slide a saddle lug into the pole position. You may need to loosen the bolt in the lug.
2. Insert a saddle lug retainer into the pole position.

Parts and tools needed for installation procedures

All assembly parts needed for installation procedures are included with the circuit breaker kits.

Tools required

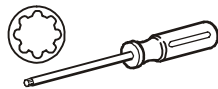
Phillips screwdriver



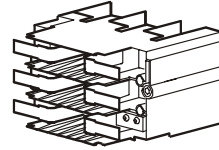
Allen wrench



T25 Torx driver

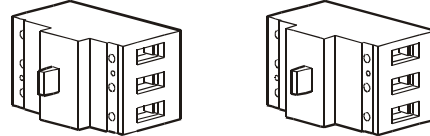


T1 three-pole breaker assembly



T1 three-pole adapter module

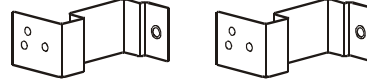
T1 three-pole breakers



M4x70 screws and washers



Breaker brackets



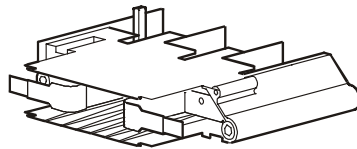
M6 x 12 Torx screws



M4x70 screws and washers

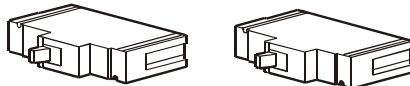


T1 single-pole breaker assembly



T1 single-pole adapter module

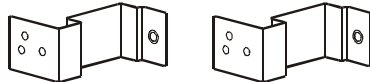
T1 single-pole breakers



M3x75 screws, washers and retainers



Breaker brackets



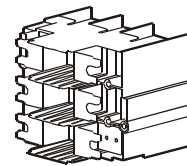
M6x12 Torx screws



M4x15 screws and washers

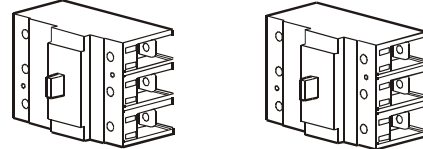


T3 three-pole breaker assembly

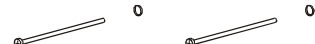


T3 three-pole adapter module

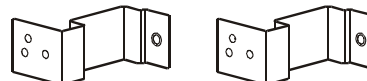
T3 three-pole breakers



M4x70 screws and washers



Breaker brackets



M6 x 12 Torx screws



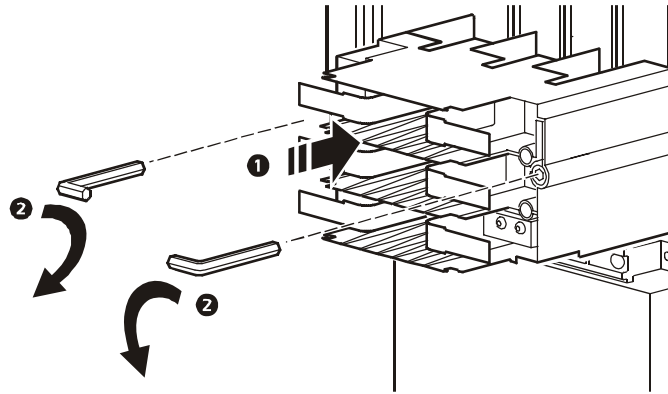
M4x70 screws and washers



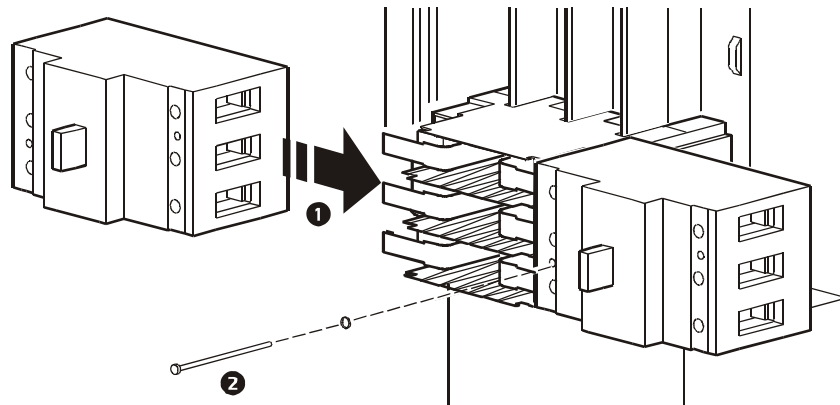
Installing breakers on the ATS panel bus

Use the following procedure to install a T1 three-pole breaker assembly on a 250 A ATS panel bus. The steps are identical for installing the T1 single-pole and T3 three-pole breakers.

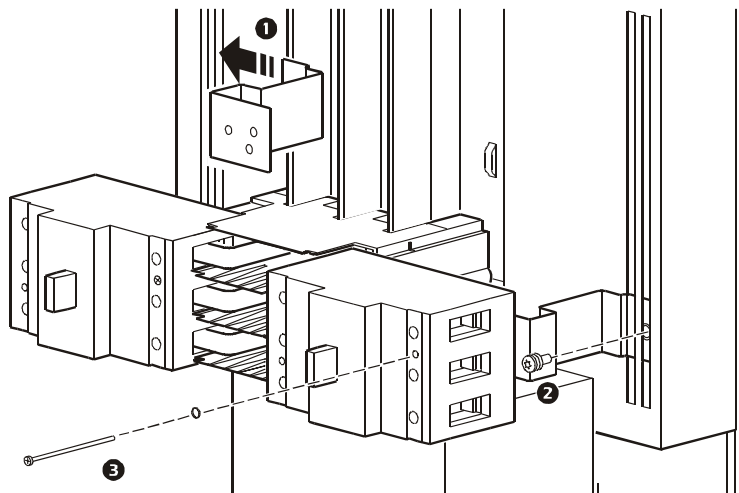
1. Attach the adapter module to the ATS panel bus (❶), and secure it in place using an Allen wrench to turn the module locks (❷).



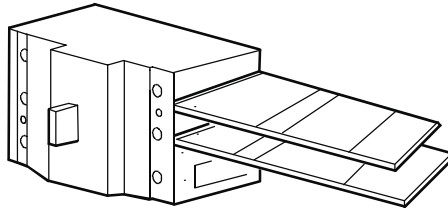
2. Snap the circuit breakers onto the adapter module's bus (❶). Lock in place using a Phillips screwdriver to tighten an M4×70 screw (❷).



3. Attach the breaker brackets to slots in the panel board frame (❶). Secure using a T25 Torx driver to tighten an M6×12 Torx screw (❷). Attach each breaker to its appropriate bracket using a Phillips screwdriver to tighten an M4×70 screw (❸).



4. Install dividers in the circuit breakers by sliding the dividers, one at a time, into the notches in the breaker.



See also

For more information about the Divider Kits for ATS circuit breakers, refer to the *Installation Instructions* (990-2245) provided with your Divider Kit.

How to Download Firmware Updates

The InfraStruXure ATS with Power Distribution requires the downloading of multiple files to update the firmware. Be sure to select all relevant files from the APC Web site for downloading, and repeat the following procedure each time you download an individual firmware file.



See also

To download a firmware upgrade to your ATS, refer to “File Transfers” in the InfraStruXure Power Generation System’s on-line *Network Management Interface User’s Guide* on the Utility CD.

From a local computer

1. Select a serial port on your local computer, and disable any service using that port.
2. Connect the configuration cable (APC part # 940-0103) to the selected port on the computer and to the console port on the ATS monitoring unit.
3. Run a terminal program (such as HyperTerminal[®]) on your computer and configure the port for 9600 bps, 8 data bits, no parity, 1 stop bit, and no flow control. Save the changes.
4. Press ENTER twice to display the **User Name** prompt.
5. Enter your **User Name** and **Password** (**apc** is the default Administrator user name and password) and press ENTER.
6. From the **Control Console** menu, select **System**, then **Tools**, then **File Transfer**, then **XMODEM**.
7. The system will prompt you with `Perform Transfer with XMODEM -CRC? Type Yes` and press ENTER.
8. The system will then prompt you to choose a transfer rate and to change your terminal settings to match the transfer rate. Press ENTER to set the ATS to accept the download.
9. In the terminal program, send the file using the XMODEM protocol. Upon completion of the transfer, the console will prompt you to restore the baud rate to normal.



Do not interrupt the download.

The ATS network management interface will reboot when the download is complete.

Specifications

Smart Distribution Panel with ATS

Electrical

Current Rating	250 A
Voltage Class	480 VAC
Voltage Available	208/120 Wye, 480 Delta, 480 Wye
Maximum Power	208 kW
Frequency	50/60 Hz Nominal, ± 5 Hz
Interrupting Rating	35 kAIC
ATS Main Protection	Magnetic fixed
ATS Switched Poles	Three
EPO connection	Dry contact and 24 VDC
EPO operation	Disconnects all outputs
Output Distribution	MCCB ABB Tmax T1 and T3 up to 225 A
Output Poles	Three
Output Breaker Max Ampacity	225 A
Length of Breaker Bus Section	10.2 in/260 mm
Number of 100 A Breaker Frames	Six T1 3-Pole [†]
Number of 225 A Breaker Frames	Four T3 3-Pole [†]
Output Distribution Protection Type	Thermal Magnetic

Physical

Dimensions	
Height	75.0 in/1905 mm
Width	28.0 in/711 mm
Depth	14.5 in/368 mm
Weight	482 lb/218 kg
Shipping Dimensions	
Height	81.0 in/2057 mm
Width	34.0 in/864 mm
Depth	34.0 in/864 mm
Maximum Shipping Weight	482 lb/219 kg
Cooling	Natural convection
Enclosure	NEMA 1 with drip protection; Raven black
Access Control	Key-locked door and fastener-locked deadfront, user-removable cover for user keypad/display and password

Installation and Wiring	208 V	480 V
Maximum Utility Input Over-current Protection Required	225 A UL-listed Breaker (50kAIC)	
Utility Input Connection Type	4W + G	3W + G or 4W+G
Size of upstream utility circuit breaker	250 A	200 A
Recommended wire size if 30°C [†]	4/0 AWG	3/0 AWG
Recommended wire size if 40°C [†]	300 kcmil	3/0 AWG
Recommended protective earth size [†]	4 AWG	6 AWG
Generator Input Connection Type	4W + G	3W + G or 4W+G
Output power of generator	80 kW	125 kW
Size of generator output breaker	250 A	200 A
Recommended wire size if 30°C [†]	4/0 AWG	3/0 AWG
Recommended wire size if 40°C [†]	300 kcmil	3/0 AWG
Recommended protective earth size [†]	4 AWG	6 AWG
Supply to Generator Heater and Charger	Hard-wire from transformer in ATS to double duplex NEMA 5-20 outlet box on generator	
Recommended wire size [†]	Two 12 AWG stranded copper	
Voltage	120 VAC	
Installation type	Floorstanding secured to wall (concrete screws included)	
Input/Output Cabling	Top and bottom routing	
Rear Access Required	No	
NEC Access Clearances	<ul style="list-style-type: none"> • Three feet to an insulated surface • Three feet to grounded parts, including concrete walls, if 208/120 V • 3 1/2 feet to grounded parts, including concrete walls, if 480/277 V • Three feet to other live parts, if 208/120 V • Four feet to other live parts, if 480/277 V 	

[†] Always follow the National Electrical Code (NFPA 75) or the Canadian Electrical Code (CSA C22.1-02) and local codes when installing the InfraStruXure Power Generation System. The AC Power Input wire sizes provided in this document are recommendations only. The ATS is provided with a panel board to supply power to multiple loads. Since loading could increase after the product's initial installation, the AC Power Input wires were selected for the maximum current that can be delivered by the panel board. If the ATS is purchased to supply a calculated load rated less than the panel board, and the load will never increase, smaller wires can be used if the requirements specified in the NEC, the CEC, and local codes are followed.

^{††} Wire sizes to loads shall be in accordance with the ratings of the circuit breakers selected to power the loads.

Environmental

Operating Temperature Range	23 to 104 °F/-5 to 40 °C; The average temperature over a 24-hour period should not exceed 95 °F/35 °C.
Operating Relative Humidity	5 to 95%, non condensing
Operating Elevation	0 to 6,562 ft/0 to 2000 m
Storage Temperature Range	-13 to 131 °F/-25 to 55 °C; The average temperature over a 24-hour period should not exceed 158 °F/70 °C
Storage Relative Humidity	5 to 95%, non condensing
Storage Elevation	0 to 49,200 ft/0 to 15000 m

Compliance

Safety	UL & cUL Listed to UL 67 (UL1008 for ATS)
Emissions	FCC Verified Class A, Per standard FCC 47 CFR Part 15
Electrostatic Discharge (ESD)	IEC 61000-4-2
Electrical Fast Transients (EFT)	IEC 61000-4-4
Surge Transient	IEC 61000-4-5
Continuous Electromagnetic Susceptibility	IEC 61000-4-3

Appendix: Custom Installations

If Source 2 is a Second Utility

Differences in your system from information presented in this manual

The ATS was designed for operation with an APC InfraStruXure generator, and this manual assumes that Source 2 is an APC InfraStruXure generator. If using a secondary utility instead of a generator, almost all references to the “generator” should be considered references to your second utility as well. However, the following sections will not apply to your system and should be disregarded:

- “Generator start sequence” on page 7
- “Generator cool-down” on page 7
- “Fuel monitoring/runtime calculation” on page 9
- “Communication converter,” (item 4) on page 13
- “Resetting automatic operation on the generator” on page 20
- “Generator” on page 37
- “Fuel Alarm Limits” on page 44



Note

If your installation includes a secondary utility source, the APC Field Service Engineer performing your start-up will configure your ATS to operate with two utility sources.

If Source 2 is a Generator that is Not an APC InfraStruXure Generator

Differences in your system from information presented in this manual

The ATS was designed for operation with an APC InfraStruXure generator, and this manual assumes that Source 2 is an APC InfraStruXure generator. If using a non-APC generator instead of an APC generator, almost all references to the “generator” will still be applicable. However, non-APC generators will generally function differently than APC generators. Therefore, the following sections will not apply to your system and should be disregarded:

- “Generator start sequence” on page 7
- “Generator cool-down” on page 7
- “Fuel monitoring/runtime calculation” on page 9
- “Communication converter,” (item 4) on page 13
- “Resetting automatic operation on the generator” on page 20
- “Generator” on page 37
- “Fuel Alarm Limits” on page 44



Note

If your installation includes a non-APC generator, the APC Field Service Engineer performing your start-up will configure your ATS to operate with this generator.

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Radio Frequency Interference



Changes or modifications to this unit which are not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

USA—FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. The user will bear sole responsibility for correcting such interference.

Canada—ICES

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

APC Worldwide Customer Support

Customer support for this or any other APC product is available at no charge in any of the following ways:

- Visit the APC Web site to access documents in the APC Knowledge Base and to submit customer support requests.
 - **www.apc.com** (Corporate Headquarters)
Connect to localized APC Web sites for specific countries, each of which provides customer support information.
 - **www.apc.com/support/**
Global support searching APC Knowledge Base and using e-support.
- Contact an APC Customer Support center by telephone or e-mail.
 - Regional centers

Direct InfraStruXure Customer Support Line	(1)(877)537-0607 (toll free)
APC headquarters U.S., Canada	(1)(800)800-4272 (toll free)
Latin America	(1)(401)789-5735 (USA)
Europe, Middle East, Africa	(353)(91)702000 (Ireland)
Japan	(0) 35434-2021
Australia, New Zealand, South Pacific area	(61) (2) 9955 9366 (Australia)

- Local, country-specific centers: go to **www.apc.com/support/contact** for contact information.

Contact the APC representative or other distributor from whom you purchased your APC product for information on how to obtain local customer support.

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